

AD-A184 347

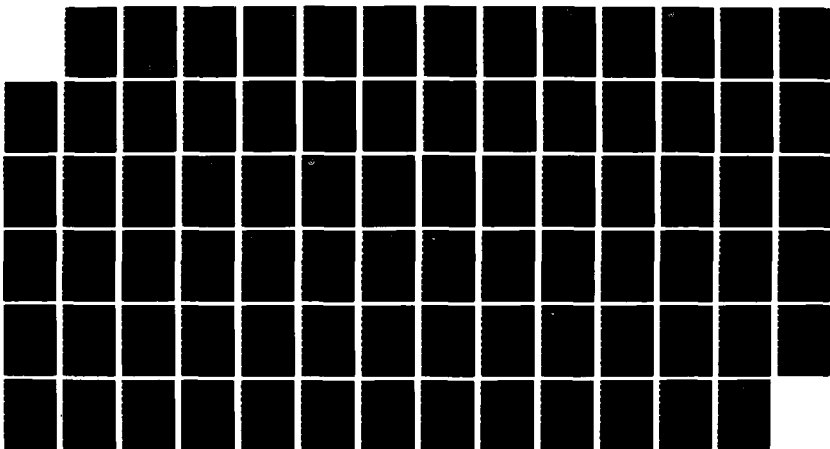
UPPER MISSISSIPPI RIVER SYSTEM - ENVIRONMENTAL
MANAGEMENT PROGRAM DEFINIT (U) ARMY ENGINEER DISTRICT
ROCK ISLAND IL FEB 87

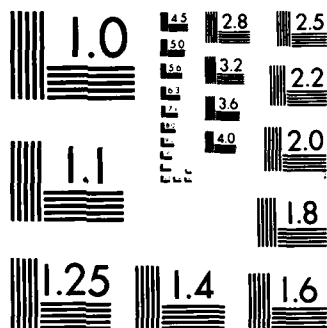
1/1

UNCLASSIFIED

F/G 13/2

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

AD-A184 347

**UPPER MISSISSIPPI RIVER SYSTEM-
ENVIRONMENTAL MANAGEMENT
PROGRAM
DEFINITE PROJECT REPORT (R1)**

**MONKEY CHUTE
RESTORATION PROJECT**

**POOL 21
UPPER MISSISSIPPI RIVER
MARION COUNTY, MISSOURI**

FEBRUARY 1987

This document has been approved
for public release and sale; its
distribution is unlimited.



**US Army Corps
of Engineers**
Rock Island District

**DTIC
ELECTE**
SEP 01 1987
S D
E

87 8 26 076

①

UPPER MISSISSIPPI RIVER SYSTEM -
ENVIRONMENTAL MANAGEMENT PROGRAM
DEFINITE PROJECT REPORT
FOR CONSTRUCTION

MONKEY CHUTE RESTORATION PROJECT
POOL 21, UPPER MISSISSIPPI RIVER
MARION COUNTY, MISSOURI

TABLE OF CONTENTS

| <u>Subject</u> | <u>Page</u> |
|--|-------------|
| Introduction | 1 |
| Project Authority | 1 |
| Project Location and Background | 1 |
| Project Purpose | 1 |
| Plan Formulation | 2 |
| Existing Conditions | 2 |
| Future Without-Project Condition | 2 |
| Alternatives Considered | 2 |
| Proposed Project | 2 |
| Project Impact | 3 |
| Project Requirements | 3 |
| Land Acquisition | 3 |
| Operation and Maintenance | 4 |
| Engineering and Construction Costs | 4 |
| Local Cooperation/Cost-Sharing Agreement | 4 |
| Coordination | 5 |
| Permit Requirements | 5 |
| Monitoring | 5 |
| Recommendation | 5 |

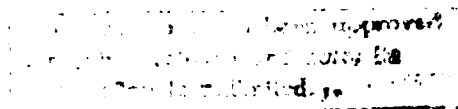
List of Plates

| <u>No.</u> | <u>Title</u> |
|------------|--|
| 1 | Location Map, Site Map, Plan and Section |

List of Appendixes

| | |
|---|---|
| A | Environmental Assessment |
| B | Correspondence |
| C | Comment Letters on the Environmental Assessment/Section 404(b)(1) Evaluation |

DISTRIBUTION LIST



UPPER MISSISSIPPI RIVER SYSTEM -
ENVIRONMENTAL MANAGEMENT PROGRAM
DEFINITE PROJECT REPORT
FOR CONSTRUCTION

MONKEY CHUTE RESTORATION PROJECT
POOL 21, UPPER MISSISSIPPI RIVER
MARION COUNTY, MISSOURI



| | |
|--------------------|-------------------------------------|
| Accession For | |
| NTIS GRA&I | <input checked="" type="checkbox"/> |
| DTIC TAB | <input type="checkbox"/> |
| Unannounced | <input type="checkbox"/> |
| Justification | <i>form 50 per</i> |
| Distribution/ | |
| Availability Codes | |
| Dist | Avail and/or Special |
| <i>A-1</i> | <i>75</i> |

INTRODUCTION

Project Authority

The 1985 Supplemental Appropriations Act (Public Law 99-88) provides authorization and appropriations for an environmental management program for the Upper Mississippi River system that includes fish and wildlife habitat rehabilitation and enhancement. The proposed project would be funded and constructed under this authorization.

Project Location and Background

The Monkey Chute project area is in Pool 21 of the Upper Mississippi River at the downstream end of an old Mississippi River side channel located just upstream of Lock and Dam 21 at approximate river mile 326 (plate 1). The chute occupies 88 acres of open water west of the navigation channel on Federal land managed by the State of Missouri.

The upstream end of the chute was cut off many years ago by deposition of sediment. Sedimentation in the lower end of Monkey Chute is now becoming acute. In severe cases when Pool 21 is below normal, sediment deposits prevent access to the chute and can strand fish and cause stagnation by isolating the chute from the river. Continued sedimentation will increase the frequency and severity of isolation, negatively impacting waterfowl, the fishery, and furbearers due to dissolved oxygen depletion, and result in the conversion of open water into marsh and then lowland brush habitat.

Project Purpose

Monkey Chute is extensively used by waterfowl, particularly during the spring migration. Fishery studies have shown that it is a very productive fish area as well. The purpose of this project is to retain 88 acres of backwater lake as year-round fish habitat, as well as to maintain its

suitability for waterfowl and furbearers. The project will help to maintain the otherwise vanishing backwater habitat which is a critical part of the Upper Mississippi River system ecosystem. An incidental effect will be increased recreational use of the chute.

PLAN FORMULATION

Existing Conditions

The Monkey Chute area consists primarily of forested bottomland and an open backwater. This backwater provides excellent habitat for sport fish and fish reproduction. Bluegill, black and white crappie, buffalo, catfish, and largemouth bass have been collected during electrofishing surveys. Extensive use also is made of the area by migrating ducks and by furbearers. The isolation of the chute during low pool periods, however, will reduce the habitat value of the area. The attached environmental assessment (appendix A) contains additional information about the environmental setting of the project area.

Future Without-Project Conditions

Under future without-project conditions, low dissolved oxygen in the chute will become a more frequent and more severe problem. As sedimentation continues, isolation of the chute will become more complete, the dissolved oxygen problem will worsen, and ultimately the open water will be converted to marsh and then lowland brush habitat.

Alternatives Considered

Other than the proposed project described below, no other practical method of providing continuously available fresh water for the backwater area has been identified. Pumped flows or the use of mechanical aerators would not be practical because of the size of the area to be benefited.

Two other alternative disposal sites for the dredged material were considered (plate 1). Area A was rejected at the request of the Missouri Department of Conservation, while Area B required the acquisition of real estate.

Proposed Project

The proposed project involves hydraulically dredging a channel from the main channel to return depth to 6 feet at normal pool, thereby providing fresh water to the chute under all pool conditions. The channel follows the existing chute to minimize dredging.

Plate 1 shows a typical cross section of the area to be dredged. It is estimated that approximately 3,000 cubic yards would be removed using a small hydraulic dredge and pumped into the sand/mud area immediately adjacent to the dredge cut. At the upstream end of the disposal area, a nylon silt retaining fence will be constructed to hold the dredged material in place and to act as a silt screen (plate 1). A steel deflection plate also will be used to dissipate the force from the dredge outfall pipe during disposal.

As soon as possible after disposal, water-tolerant herbaceous vegetation with short germination periods, such as rye grass, will be seeded on the dredged material by the Corps of Engineers. This vegetation should stabilize the dredged material and prevent it from being washed away during high water. During the following year, trees and shrubs beneficial to wildlife would be planted by the Missouri Department of Conservation.

The project would be constructed under contract in accordance with plans and specifications prepared by the Corps of Engineers. If construction funds are received by March 1987, and plans and specifications are complete, the project could be constructed during the spring/summer of 1987. The excavated material would then be seeded in the fall of 1987.

Project Impact

Construction of the project would have some short-term disturbance impacts from the filling activities. These conditions, however, would be minor and short-term, with recovery expected in one season after dredged material placement. It is not anticipated that the project would introduce toxic substances into nearby waters or result in appreciable increases in existing levels of toxic materials. The project would restore water circulation during low-flow periods to Monkey Chute, helping to maintain water quality levels during critical periods, particularly dissolved oxygen. It also will permit the movement of fish in and out of Monkey Chute, allowing the entrance of spawning adults and release of the adults and young. In addition, through revegetation efforts, bottomland hardwood species more beneficial to wildlife should repopulate the area. The attached environmental assessment (appendix A) contains additional information on project impacts.

PROJECT REQUIREMENTS

Land Acquisition

No land needs to be acquired for the project, since the dredged material will be placed on land owned by the Corps of Engineers and managed by the Missouri Department of Conservation for wildlife management.

Operation and Maintenance

The Corps of Engineers will monitor the project for 10 years to determine the efficacy of this technique of backwater restoration at Monkey Chute.

Engineering and Construction Costs

The estimated engineering and construction costs for the proposed project are:

Construction

| | |
|---------------------------------------|----------|
| 3,000 cubic yds dredging at \$4/cy | \$12,000 |
| stump and snag removal | 1,000 |
| silt screen 180 yds at \$7.80/yd | 1,400 |
| construction subtotal | 14,400 |
| contingencies (25%) | 3,600 |
| Engineering and design (15%) | 2,700 |
| Supervision and administration (8%) | 1,440 |
| Total Project Costs | \$22,140 |

Local Cooperation/Cost-Sharing Agreement

The benefits that would accrue from the project would be nationally significant. All of the work being conducted would improve fish, waterfowl, and furbearer habitat on General Plan land owned by the Corps of Engineers and managed by the State of Missouri Department of Conservation for wildlife management purposes under a 1951 agreement between the State of Missouri, U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers. Therefore, the cost-sharing would be 100 percent Federal.

As the project would be constructed under the management of the Corps of Engineers, a local sponsor would not be necessary for construction.

Coordination

The Corps of Engineers has coordinated the project with the U.S. Fish and Wildlife Service, the Missouri Department of Conservation, the Missouri Department of Natural Resources, and other Federal and State agencies.

The Environmental Assessment/Finding of No Significant Impact has been circulated to the public for review. In addition, the Corps of Engineers has issued a public notice on the project and offered an opportunity for a public hearing.

Permit Requirements

The Corps of Engineers has obtained all applicable local and State permits.

As part of the process of ensuring project compliance with all Federal environmental statutes, the Rock Island District has prepared a Section 404(b)(1) Evaluation and obtained Section 401 water quality certification (appendix A).

Monitoring

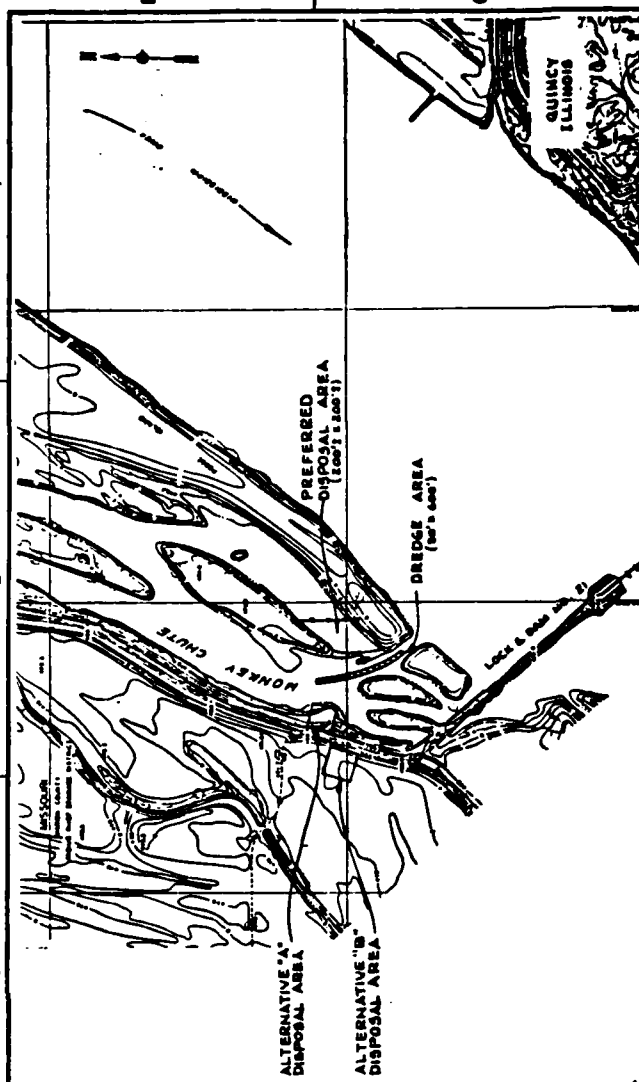
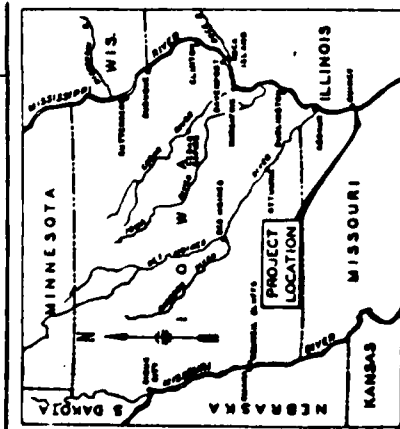
Premonitoring has shown low entrance depth and current use by fish. Post-construction monitoring of dissolved oxygen, temperature, fish use, and sedimentation will be conducted under the Long-Term Resource Monitoring Program.

RECOMMENDATION

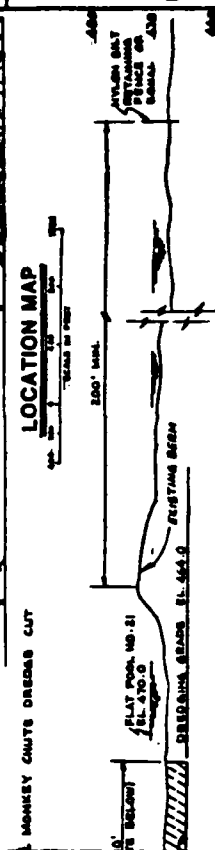
I recommend that the Secretary of Army, under the Upper Mississippi River System - Environmental Management Program, enter into an agreement with the Missouri Department of Conservation for the Monkey Chute restoration project on a 100 percent Federal cost basis. The total cost of the project would be \$22,140. I further recommend that the funds be allocated in FY 87 for project construction.



Neil A. Smart
Colonel, Corps of Engineers
District Engineer



LOCATION MAP



TYPICAL SECTION
NO SCALE

- NOTES:**
1. FLAT POOL NO. 21 ELEV. 470.0
 2. SOUNDINGS ARE ADJUSTED TO FLAT POOL ELEVATION.
 3. FALLEN TREES WITHIN THE DREDGING LIMITS SHALL BE REMOVED AND PLACED IN DISPOSAL AREA.

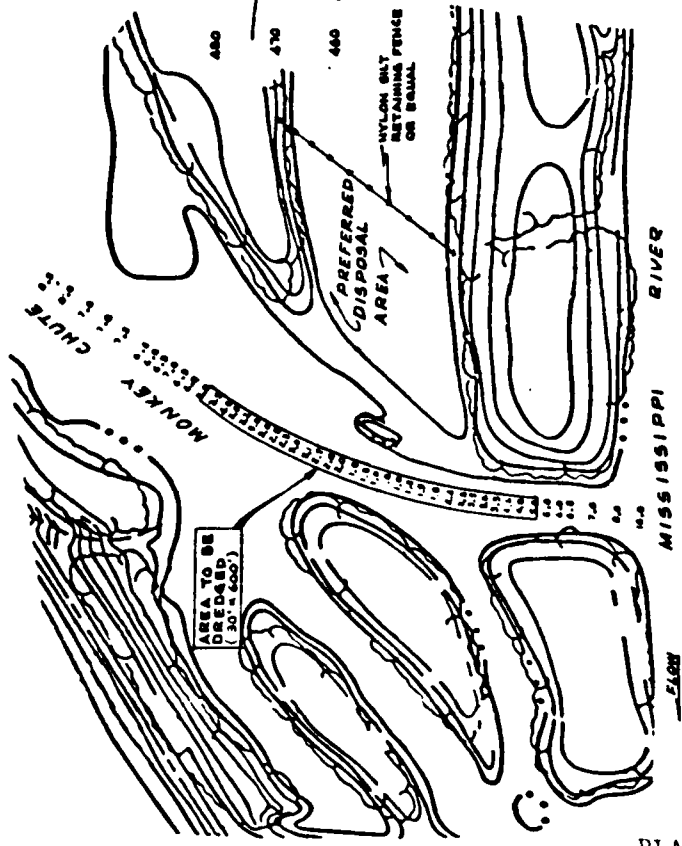


PLATE 1

| | | | |
|--|-----------|--|-------------|
| U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS MOBILE, ALABAMA | | MISSISSIPPI RIVER 21 POOL NO. 21 MONKEY CHUTE BACKWATER DREDGING SITE MAPS, PLAN & SECTION | |
| Project No. | Drawn by | Checked by | Approved by |
| C.D.B. | C.D.B. | C.D.B. | C.D.B. |
| Scale | Scale | Scale | Scale |
| Sheet No. | Sheet No. | Sheet No. | Sheet No. |
| 1 | 1 | 1 | 1 |

ENVIRONMENTAL ASSESSMENT

A

P

P

E

N

D

I

X

A



REPLY TO
ATTENTION OF
NCRPD-E

DEPARTMENT OF THE ARMY
ROCK ISLAND DISTRICT, CORPS OF ENGINEERS
CLOCK TOWER BUILDING - P.O. BOX 2004
ROCK ISLAND, ILLINOIS 61204-2004

ENVIRONMENTAL ASSESSMENT

UPPER MISSISSIPPI RIVER SYSTEM -
ENVIRONMENTAL MANAGEMENT PROGRAM

MONKEY CHUTE RESTORATION PROJECT
POOL 21, MARION COUNTY, MISSOURI

SEPTEMBER 1986

ENVIRONMENTAL ASSESSMENT
UPPER MISSISSIPPI RIVER SYSTEM -
ENVIRONMENTAL MANAGEMENT PROGRAM

MONKEY CHUTE RESTORATION PROJECT
POOL 21, MARION COUNTY, MISSOURI

TABLE OF CONTENTS

| | <u>Subject</u> | <u>Page</u> |
|-------|---|-------------|
| I. | Authority and Need for Action | EA-1 |
| II. | General Location and Description of the Proposed Project | EA-1 |
| III. | Alternatives Not Selected | EA-2 |
| IV. | Affected Environment | EA-2 |
| V. | Environmental Consequences of Proposed Project | EA-3 |
| VI. | Probable Adverse Environmental Effects Which Cannot Be Avoided | EA-11 |
| VII. | Relationship Between Short-Term Use of Man's Environment and Maintenance and Enhancement of Long-Term Productivity | EA-11 |
| VIII. | Any Irreversible or Irretrievable Commitments of Resources Which Would Be Involved if the Proposed Action Should Be Implemented | EA-11 |
| IX. | Relationship of the Proposed Project to Land-Use Plans | EA-11 |
| X. | Compliance with Environmental Quality Statutes | EA-11 |
| XI. | Coordination | EA-13 |
| XII. | Conclusions | EA-13 |
| | REFERENCES | EA-14 |

TABLE OF CONTENTS (Cont'd)

List of Tables

| <u>No.</u> | <u>Title</u> | <u>Page</u> |
|------------|--|-------------|
| EA-1 | Effects of Recommended Plan on Resources of Principal National Recognition | EA-4 |
| EA-2 | Population Trends for the Affected Area | EA-5 |
| EA-3 | Missouri Threatened and Endangered Species in Marion County | EA-8 |
| EA-4 | Compliance of the Recommended Plan with WRC-Designated Environmental Statutes | EA-12 |

ATTACHMENTS:

Finding of No Significant Impact (FONSI)
Project Plate
Section 404(b)(1) Evaluation
Correspondence
Distribution List

ENVIRONMENTAL ASSESSMENT

UPPER MISSISSIPPI RIVER SYSTEM - ENVIRONMENTAL MANAGEMENT PROGRAM

MONKEY CHUTE RESTORATION PROJECT POOL 21, MARION COUNTY, MISSOURI

I. AUTHORITY AND NEED FOR ACTION.

Public Law (PL) 95-502 authorized the construction of a new dam and 1,200-foot lock at Alton, Illinois, and directed the Upper Mississippi River Basin Commission to prepare a comprehensive Master Plan for the Management of the Upper Mississippi River System. The Basin Commission completed the Master Plan report and submitted it to Congress on 1 January 1982. The report recommended an environmental management program that included construction of habitat rehabilitation and enhancement projects.

The 1985 Supplemental Appropriations Bill (PL 99-88), signed into law by President Reagan on 15 August 1985, provides authorization and appropriations for an environmental management program for the Upper Mississippi River System that includes fish and wildlife habitat rehabilitation and enhancement. The proposed project would be funded under this authorization.

The purpose of the proposed project is to restore the water connection between the Mississippi River and Monkey Chute for the benefit of riverine aquatic resources.

II. GENERAL LOCATION AND DESCRIPTION OF THE PROPOSED PROJECT.

Monkey Chute is an old Mississippi River side channel located just upstream of Lock and Dam 21 at approximate river mile (RM) 325 (see plate 1). The chute lies west of the navigation channel and is within the State of Missouri.

The upstream end of the chute was cut off many years ago by deposition of sediment. Sedimentation in the lower end of Monkey Chute is now becoming acute. In cases when Pool 21 is below normal, deposited sediment isolates the chute from the river which strands aquatic organisms and causes water stagnation. Monkey Chute is extensively used by waterfowl, particularly during the spring migration. Fishery studies also have shown that this is a very productive fish area.

As recommended by the Missouri Department of Conservation (MDOC), a small dredge cut of about 3,000 cubic yards will be made using a mudcat dredge in the lower end of the chute, as shown on plate 1. The dimensions of the dredge cut will be about 600 feet long by 30 feet wide, with an average depth of 4 feet. The dredged material will be pumped into the sand/mud area immediately adjacent to the dredge cut (see plate 1). At the upstream end of the disposal area, a nylon silt retaining fence will be constructed in order to hold the dredged material in place and to act as a silt screen. Hay bales also will be used to dissipate the force from the dredge outfall pipe during disposal.

III. ALTERNATIVES NOT SELECTED.

A. No Action. In the absence of the proposed project, continuing sedimentation in the downstream opening will eventually isolate Monkey Chute from the Mississippi River, thereby eliminating water circulation and access by fish and the public. The loss of this backwater area would be unacceptable from the aquatic resource standpoint.

B. Alternative Disposal Areas. Disposal of dredged material on the adjacent agricultural field (Area B on plate 1) was investigated. This site was not selected due to the need for land acquisition.

Disposal of dredged material in the land adjoining Monkey Chute (Area A on plate 1) also was investigated. It was decided that this site was too narrow to provide adequate room to construct a bermed area in order to contain the silt material.

IV. AFFECTED ENVIRONMENT.

A. Climate. Climate for the area is humid continental, characterized by hot summers and cold winters. The mean average annual temperature at Quincy, Illinois, is 54.1°F (12.3°C). The mean annual precipitation is 37.2 inches (94.5 cm).

B. Air and Noise Quality. The air quality in the area is generally good. In 1984, no excursions of the State of Illinois standards occurred for total suspended particulates, sulfur dioxide, or ozone as measured in Quincy, Illinois.

Ambient noise levels would be moderate during tow activity at Lock and Dam 21. No sensitive noise receptors such as hospitals or schools are located within 1 mile of the project site.

C. Water Quality. Water and sediment samples were collected in late June 1986. Sediment ranged from primarily silt, to a mixture of fine sand and silt, to primarily fine sand. Ambient water samples did not exceed any State of Missouri water quality standard, although the lead concentration equalled the State standard. In the elutriate samples, only un-ionized ammonia-nitrogen exceeded the State standard.

D. Aquatic Resources. Portions of the backwater area known as Monkey Chute provide excellent aquatic habitat. Fish species depend upon the backwater area to provide essential spawning, rearing, resting, and feeding habitat. Fish surveys conducted by the MDOC in 1983 and 1984 revealed a diverse and abundant sport fishery, including crappie, bluegill, bass, and catfish.

Pool 21 is considered to have generally poor mussel populations. In the immediate project area, the silty nature of the substrate does not provide good quality mussel habitat.

E. Terrestrial/Wildlife Resources. A variety of mammal species depend on the habitat provided by the Monkey Chute backwater area for food, including fox, raccoon, opossum, squirrel, muskrat, and beaver. The river otter, a State of Missouri endangered species, also would likely occur in the area.

F. Archeological-Historical Resources. The proposed dredge cut is a deepening of an existing channel. The preferred disposal site is immediately adjacent to the dredge cut and is a recently accreted sand/mud island. The alternate disposal area (Area A on plate 1) is an open mudflat area below the existing levee. Shovel tests to a depth of 80 cm at this site indicated layers of flood-deposited silty clay down to the present water table. None of the proposed construction activities will affect landforms with a potential for containing significant cultural resources.

V. ENVIRONMENTAL CONSEQUENCES OF PROPOSED PROJECT.

A summary of project impacts can be found in Table EA-1, Effects of the Recommended Plan on Resources of Principal National Recognition.

A. Social and Economic Impacts.

1. Affected Property. The area affected by the proposed Monkey Chute Restoration Project includes Marion and Lewis Counties in Missouri and Adams County in Illinois. The development of the three-county area is primarily agricultural. The combined 1985 population of the affected counties was approximately 111,400, with employment chiefly in manufacturing activities. As illustrated in table EA-2, the entire area has registered a slight increase in population over the past 15 years.

TABLE EA-1

Effects of the Recommended Plan on Resources of Principal National Recognition

| Types of Resources | Principal Sources of National Recognition | Measurement of Effects |
|---|---|--|
| Air Quality | Clean Air Act, as amended (41 U.S.C. 1857h-7 et seq.) | No violation of air quality standards anticipated. |
| Areas of Particular Concern Within the Coastal Zone | Coastal Zone Management Act of 1972, as amended (16 U.S.C. 1451 et seq.) | Not present in planning area. |
| Endangered and Threatened Species Critical Habitat | Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) | No impacts anticipated. |
| Fish and Wildlife Habitat | Fish and Wildlife Coordination Act (16 U.S.C. Sec. 661 et seq.) | No adverse impacts anticipated. |
| Floodplain: | Executive Order 11988, Floodplain Management | No impact. |
| Historic and Cultural Properties | National Historic Preservation Act of 1966, as amended (16 U.S.C. Sec. 470 et seq.) | No impacts anticipated. |
| Prime and Unique Farmland | CEQ Memorandum of 1 August 1980: Analysis of Impacts on Prime and Unique Agricultural Lands in Implementing the National Environmental Policy Act | Not affected. |
| Water Quality | Clean Water Act of 1977 (33 U.S.C. 1251 et seq.) | No adverse impacts anticipated. |
| Wetlands | Executive Order 11990, Protection of Wetlands, Clean Water Act of 1977 (42 U.S.C. 1857h-7 et seq.) | No adverse impacts anticipated. |
| Wild and Scenic Rivers | Wild and Scenic Rivers Act, as amended (16 U.S.C. 1271 et seq.) | Not present in project area. |

TABLE EA-2

Population Trends for the Affected Area 1/ 2/

| Area | 1970 | Population 1980 | 1985 | % Change 1980 - 1985 |
|-------------------|--------|--------------------|--------|-------------------------|
| Lewis County, MO | 10,993 | 10,901 | 10,956 | 0.5 |
| Marion County, MO | 28,121 | 28,638 | 28,782 | 0.5 |
| Adams County, IL | 70,893 | 71,652 | 71,701 | 0.1 |

1/ U.S. Bureau of the Census, County and City Data Book, 1983,
U.S. Government Printing Office: 1983.

2/ Claritas Corporation, REZIDE, 1980 and 1985, The National
Encyclopedia of Residential ZIP Code Demography.

2. Community Growth. Based on the small scale of the project, few employees would be required. The surrounding area would not be affected since the local population provides a labor pool of sufficient size to absorb project needs.

3. Community Cohesion. No effects on community cohesion would be expected due to the project's limited area of influence.

4. Property Values. Property values for land adjacent to Monkey Chute may increase slightly due to the improved aquatic resources.

5. Regional Growth. No effects on regional growth would be expected due to the project's limited area of influence.

6. Tax Revenues. A slight increase in tax revenues may occur as a result of any rise in property values for land adjacent to Monkey Chute. A small increase in boat ownership and purchases may result from the project. Tax revenues would then slightly rise as a result of increased sales tax and boat and fishing license fee revenues.

7. Public Facilities. Public boating and fishing facilities would be improved as a result of the dredging of Monkey Chute.

8. Public Services. The project would help fulfill a portion of the recreational boating and fishing needs of the general public within the three-county area.

9. Displacement of People. No relocations would be required for the project.

10. Employment/Labor Force. The project would not affect the permanent employment or labor force of the three-county area. There would be no increase in area employment during construction, due to the minor nature of the project.

11. Business and Industrial Activities. Changes in business and industrial activity would be minimal. No business relocations would be required for the project.

12. Farm Displacement. No farms would be affected by the project.

13. Noise Levels. The dredging at Monkey Chute would temporarily increase noise levels. However, it is unlikely that this increase would significantly affect the surrounding area because sensitive receptors such as hospitals and schools are located at least 1 mile from the project site.

B. Environmental Impacts.

1. Aquatic Resources. The upstream end of the disposal site will be enclosed using a nylon silt retaining fence. This is being done to inhibit sediment flow and should act to slow and filter the sediment after disposal. Hay bales also will be used to dissipate the force from the dredge outfall pipe during disposal.

Dredging would prevent closure of the access channel. This will assist in maintaining good water quality within Monkey Chute and will permit the movement of fish in and out of Monkey Chute, as well as public access.

During the site visit, there was no evidence of large numbers of silt-tolerant mussel species.

2. Terrestrial Resources. The vegetation consisting of small willow shoots on the disposal site will not be removed. As soon as possible after disposal, water-tolerant herbaceous vegetation with short germination periods such as reed canary grass, fescue, or annual rye grass will be seeded on the dredged material. This grass should stabilize the dredged material and prevent it from being washed away during high water. During the following year, trees and shrubs beneficial to wildlife would be planted by the MDOC.

3. Threatened or Endangered Species. ^{1/} The U.S. Fish and Wildlife Service (FWS) has indicated that the following federally endangered species may be present in the area:

American bald eagle (Haliaeetus leucocephalus)

Fat pocketbook pearly mussel (Potamilus capax)

a. American Bald Eagle. The American bald eagle uses this reach of the Mississippi River as a source of food during the winter months because of the open water near the dam. Mature trees along the shoreline

^{1/} Constitutes a biological assessment under Section 7 of the Endangered Species Act of 1973, as amended.

are used by wintering eagles as feeding/perch trees. The bald eagle will not be affected by the proposed project since no trees will be removed and dredging would not take place during the winter months (December - February).

c. Fat Pocketbook Pearly Mussel. The fat pocketbook pearly mussel is a large river species which has been found on both a sand and mud substrate and in various depths of water. According to the U.S. FWS, the proposed dredge cut and disposal area is not suitable as habitat for this mussel species.

Therefore, significant, adverse impacts to these federally listed endangered species are not anticipated. The U.S. FWS has agreed with this conclusion (see Coordination Act Report dated 28 July 1986).

River otters, a State of Missouri endangered species, have been released in the area by Missouri biologists. However, State and Federal biologists have determined that the proposed project would have no effect on this species since disturbances would be temporary and no denning sites are located in the project area. (See Coordination Act Report dated 28 July 1986).

The publication entitled Rare and Endangered Species of Missouri (Wilson 1984) by the MDOC was used to identify the State threatened and endangered species. Table EA-3 discusses the species listed for Marion County, their status, and anticipated impact from the proposed project. No significant adverse impacts are anticipated to any of the species listed. However, a possible beneficial impact may occur for the water birds listed, due to improvement of the Monkey Chute backwater habitat.

TABLE EA-3

Missouri Threatened and Endangered Species
in Marion County

| <u>Scientific Name</u> | <u>Common Name</u> | <u>Status</u> | <u>Range/ Habitat</u> | <u>Project Impact</u> |
|--|---------------------|---------------|---|--|
| <u>Accipiter cooperii</u> | Cooper's Hawk | Endangered | Primarily a migrant and winter resident | Construction to take place before winter - no impact |
| <u>Accipiter striatus</u> | Sharp-Shinned Hawk | Endangered | Primarily a migrant and winter resident | Construction to take place before winter - no impact |
| <u>Acipenser fulvescens</u> | Lake Sturgeon | Endangered | Large rivers and lakes with substrate of sand & gravel | Habitat not in project area - no impact |
| <u>Bartramia longicauda</u> | Upland Sandpiper | Rare | Native prairie; mixed grass pastures and hayfields; no recent records | Habitat not in project area - no impact |
| <u>Botaurus lentiginosus</u> | American Bittern | Rare | Uncommon migrant | No impact |
| <u>Buteo lineatus</u> | Red-Shouldered Hawk | Rare | Bottomland forests | Not impacted by the project |
| <u>Chelone obliqua</u> <u>L. var speciosa</u> | Rose Turtlehead | Endangered | Swampy meadows, margins of springs, low wet woods | Not impacted by the project |
| <u>Circus cyaneus</u> | Northern Harrier | Endangered | Nesting limited to tall grass prairie remnants; migrant and winter resident | Habitat not in project area - no impact |

TABLE EA-3 (Cont'd)

| Scientific Name | Common Name | Status | Range/ Habitat | Project Impact |
|----------------------------------|----------------------------|---------------------|---|---|
| <u>Dodecatheon amethystinum</u> | Amethyst Shooting Star | Rare | Crevices and steep slopes of north-facing limestone bluffs | Habitat not in project area - no impact |
| <u>Egretta caerulea</u> | Little Blue Heron | Rare | Presently nests only in SE. Missouri - migrant during post-breeding dispersal | No adverse impact; possible beneficial impact from improving back-water habitat |
| <u>Falco peregrinus</u> | Peregrine Falcon | Endangered | Migrant along large rivers and lakes | No impact |
| <u>Floerkea proserpinacoides</u> | False Mermaid | Rare | Alluvial woodlands | Not impacted by the project |
| <u>Lampsilis higginsii</u> | Higgins' Eye Pearly Mussel | Endangered | Substrate of mixed mud, sand and gravel in deep water habitat | Substrate in project area silt and not suitable - no impact |
| <u>Lechea racemulosa</u> | Pinweed | Possibly Extirpated | Only historically known in Marion County | No impact |
| <u>Lota lota</u> | Burbot | Rare | No recent records in Marion County | No impact |
| <u>Macrochelys temminckii</u> | Alligator Snapping Turtle | Rare | Large rivers, sloughs, and oxbows in SE. Missouri | No impact |
| <u>Mustela frenata</u> | Long-Tailed Weasel | Rare | Woodlands, old fields, fence rows | Habitat not in project area - no impact |
| <u>Notropis annis</u> | Pallid Shiner | Possibly Extirpated | Quiet pools, creeks to large rivers - no recent records in Missouri | No impact |

TABLE EA-3 (Cont'd)

| Scientific Name | Common Name | Status | Range/ Habitat | Project Impact |
|------------------------------|---------------------------|------------|---|--|
| <u>Nycticorax nycticorax</u> | Black-Crowned Night Heron | Rare | Marsh and swamp habitat | No adverse impact; possible beneficial impact from improvement of backwater habitat |
| <u>Phalacrocorax auritus</u> | Double-Crested Cormorant | Endangered | Uncommon migrant and casual winter resident - no recent nesting records | Formerly nested in backwaters - possible beneficial impact from improvement of backwater habitat |
| <u>Sambucus pubens</u> | Red-Berried Elder | Endangered | Shaded, north-facing, wooded limestone bluffs and ledges | Habitat not in project area - no impact |

4. Archeological-Historical. A reconnaissance survey of the proposed project area by District archeologists indicated that channel dredging and dredged material disposal at the Monkey Chute location would have No Effect on significant cultural resources.

5. Air Quality. Impacts to air quality could occur during construction from exhaust emissions and fugitive dust particles. These impacts will be minor and short-term. No violations of air quality standards are anticipated.

6. Water Quality. Water quality impacts are discussed in the Section 404(b)(1) Evaluation.

The elutriate test was used to simulate river conditions that would occur during dredging. The elutriate test results indicate that if dredging were to occur under conditions observed during sampling, high un-ionized ammonia-nitrogen concentrations may result. However, the percent of ammonia-nitrogen in the un-ionized form is dependent on pH and water temperature. Therefore, dredging will be done when the pH and temperature would be lower (pH less than 8.0; water temperature less than 15°C) to reduce the un-ionized ammonia-nitrogen concentrations. These conditions should exist from October through April.

VI. PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED.

A. Natural Resources. Fish, wildlife, water quality, and other natural resources will not be significantly impacted by the proposed project.

B. Social Impacts. Noise generated during construction activities would be unavoidable, but would not create any human health or welfare problems since the increased noise levels would be minor and short-term and would occur during regular working hours.

VII. RELATIONSHIP BETWEEN SHORT-TERM USE OF MAN'S ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY.

Dredging the downstream opening of Monkey Chute is necessary because continuing sedimentation will eventually isolate the chute from the Mississippi River, which will eliminate water circulation and access by fish and the public.

VIII. ANY IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH WOULD BE INVOLVED IF THE PROPOSED ACTION SHOULD BE IMPLEMENTED.

Manpower, fuel expended, and material used in the proposed project would be irretrievable.

IX. RELATIONSHIP OF THE PROPOSED PROJECT TO LAND-USE PLANS.

Land use after the project will be essentially the same as before the project.

X. COMPLIANCE WITH ENVIRONMENTAL QUALITY STATUTES.

A summary of compliance with environmental statutes can be found in Table EA-4 - Compliance of the Recommended Plan with WRC-Designated Environmental Statutes.

A. Archeological/Historical. Coordination was initiated with the Missouri State Historic Preservation Officer (SHPO) in accordance with Section 106 of the National Historic Preservation Act of 1966 (as amended) by letter dated 24 June 1986. The SHPO responded by letter dated 14 July 1986 and concurred with the findings that the project will have no effect on significant historic, architectural, or archeological sites in the area. These letters are attached to the EA.

B. Fish and Wildlife Coordination Act. Coordination with the U.S. FWS and the MDOC has been completed. The Fish and Wildlife Coordination Act Report (CAR), dated 28 July 1986, is attached to this EA. The U.S. FWS made the following recommendations and conclusions in the CAR concerning the proposed project:

1. Silt screens should be placed across the downstream (sic) end of the mudflat with the bottom of the screen secured into the substrate.

TABLE EA-4

Compliance of the Recommended Plan with WRC-
Designated Environmental Statutes

| <u>Federal Policies</u> | <u>Compliance</u> |
|---|-------------------|
| Archaeological and Historic Preservation Act, 16 U.S.C. 469, et seq. | Full compliance |
| Clean Air Act, as amended, 42 U.S.C. 1857h-7, et seq. | Full compliance |
| Clean Water Act (Federal Water Pollution Control Act) 33 U.S.C. 1251, et seq. | Full compliance |
| Coastal Zone Management Act, 16 U.S.C. 1451, et seq. | Not applicable |
| Endangered Species Act, 16 U.S.C. 1531, et seq. | Full compliance |
| Estuary Protection Act, 16 U.S.C. 1221, et seq. | Not applicable |
| Federal Water Project Recreation Act, 16 U.S.C. 460-1(12), et seq. | Not applicable |
| Fish and Wildlife Coordination Act, 16 U.S.C. 661, et seq. | Full compliance |
| Land and Water Conservation Fund Act, 16 U.S.C. 460/-460/-11, et seq. | Not applicable |
| Marine Protection Research and Sanctuary Act, 33 U.S.C. 1401, et seq. | Not applicable |
| National Environmental Policy Act, 42 U.S.C. 4321, et seq. | Full compliance |
| National Historic Preservation Act, 16 U.S.C. 470a, et seq. | Full compliance |
| River and Harbor Act, 33 U.S.C. 403, et seq. | Full compliance |
| Watershed Protection and Flood Prevention Act, 16 U.S.C. 1001, et seq. | Not applicable |
| Wild and Scenic Rivers Act, 16 U.S.C. 1271, et seq. | Not applicable |

NOTES:

1. Full compliance. Having met all requirements of the statutes for the current stage of planning (either preauthorization or postauthorization).
2. Partial compliance. Not having met some of the requirements that normally are met in the current stage of planning. Partial compliance entries should be explained in appropriate places in the report and referenced in the table.
3. Noncompliance. Violation of a requirement of the statute. Non-compliance entries should be explained in appropriate places in the report and referenced in the table.
4. Not applicable. No requirements for the statute required.

2. The pressure at the outfall of the pipe should be dissipated by using hay bales or some other means.
3. The disposal area should be stabilized by planting a fast growing grass immediately after project completion. In the following year, trees and shrubs beneficial to wildlife should be planted.

District Response: A silt screen will be placed across the upstream end, not the downstream end, of the disposal area, as coordinated with the U.S. FWS.

All of these recommendations are incorporated into the proposed project.

C. Executive Order 11988, Floodplain Management. Land use after the project would be essentially the same as land use before the project. The proposed action will not encourage further development in the floodplain.

D. Executive Order 11990, Protection of Wetlands. Executive Order 11990 recognizes the significant values provided by wetlands and requires each Federal agency to provide leadership and take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. Disposal of material may impact a minor amount of wetland habitat, depending upon the river stage at the time of disposal, but this is unavoidable and would not create significant impacts.

XI. COORDINATION.

The proposed project addressed in this Environmental Assessment is being coordinated with the following agencies:

U.S. Fish and Wildlife Service
Missouri Department of Natural Resources
Missouri Department of Conservation
Missouri State Historic Preservation Officer
U.S. Environmental Protection Agency

XII. CONCLUSIONS.

No significant impacts to the quality of the human environment would result from the proposed project to restore the water connection between the Mississippi River and Monkey Chute.

REFERENCES

- Illinois Environmental Protection Agency. 1984. Illinois Annual Air Quality Report, 1983. Division of Air Pollution Control. IEPA/APC/84-010. 156 pp.
- U.S. Department of the Interior, Fish and Wildlife Service, Endangered Species, Great Lakes Region, with updates.
- Wilson, J.H., ed. 1984. Rare and Endangered Species of Missouri. Missouri Department of Conservation. 171 pp.

FINDING OF NO SIGNIFICANT IMPACT

FINDING OF NO SIGNIFICANT IMPACT

UPPER MISSISSIPPI RIVER SYSTEM -
ENVIRONMENTAL MANAGEMENT PROGRAM

MONKEY CHUTE RESTORATION PROJECT
POOL 21, MARION COUNTY, MISSOURI

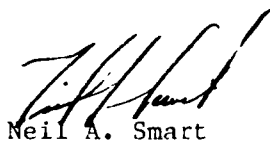
I have reviewed the information provided by this Environmental Assessment, along with data obtained from Federal and State agencies having jurisdiction by law or special expertise and from the interested public. I find that undertaking the Monkey Chute, Missouri, Restoration Project will not significantly affect the quality of the human environment. Therefore, it is my determination that an Environmental Impact Statement is not required. This determination will be reevaluated if warranted by later developments. Alternatives considered included "no action" and alternative disposal areas.

Factors considered in making a determination that an Environmental Impact Statement was not required are as follows:

1. The proposed project would improve the fish and wildlife resources and water quality of the Monkey Chute backwater area.
2. No significant impacts to fish and wildlife resources would result from the proposed action.
3. Noise impacts would be minor and short-term and would not impact on human health or welfare.
4. No significant social, economic, environmental, or cultural impacts are anticipated as a result of the proposed action.

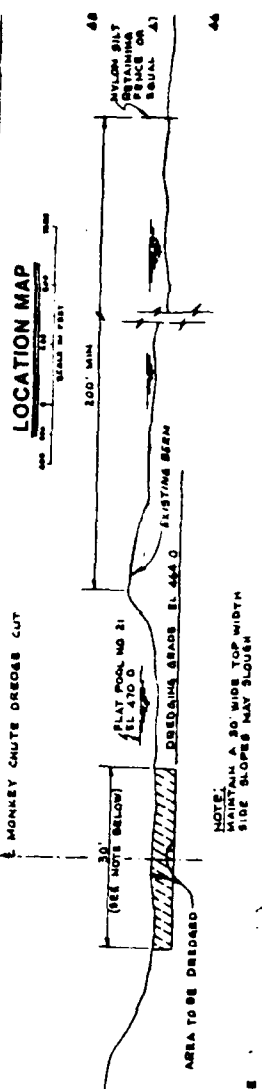
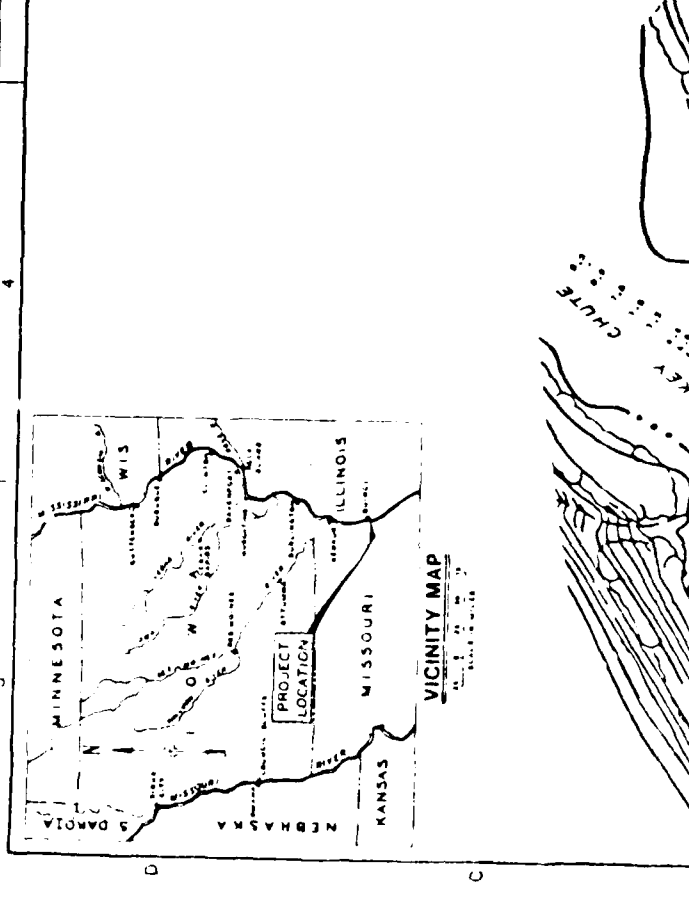
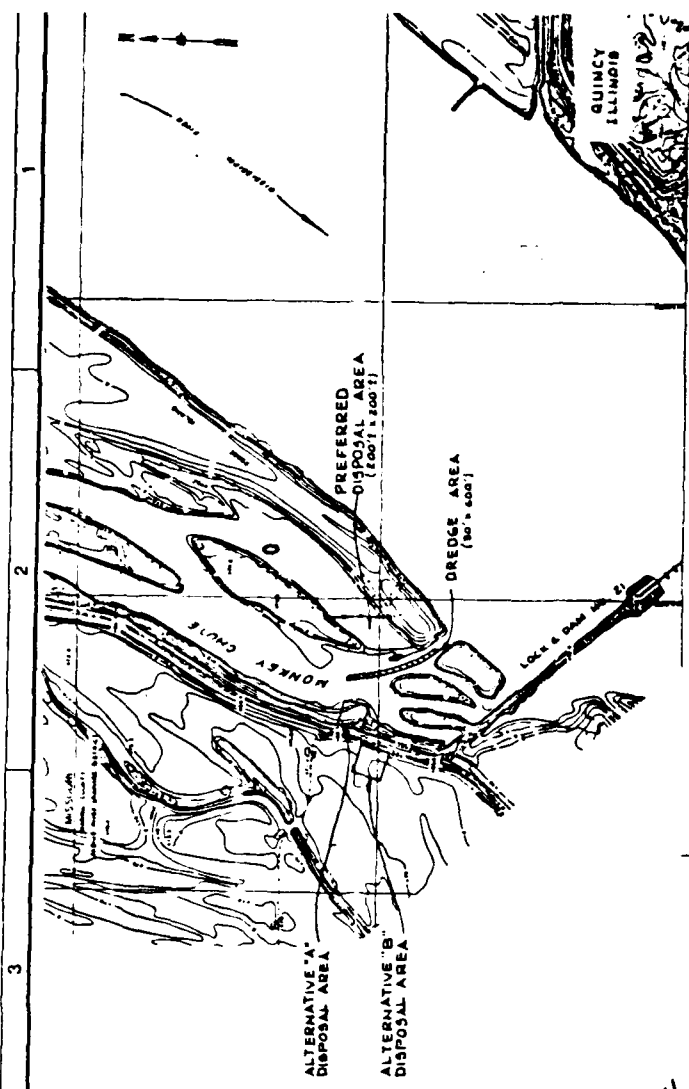
6 February 1967

Date



Neil A. Smart
Colonel, Corps of Engineers
District Engineer

PROJECT PLATE



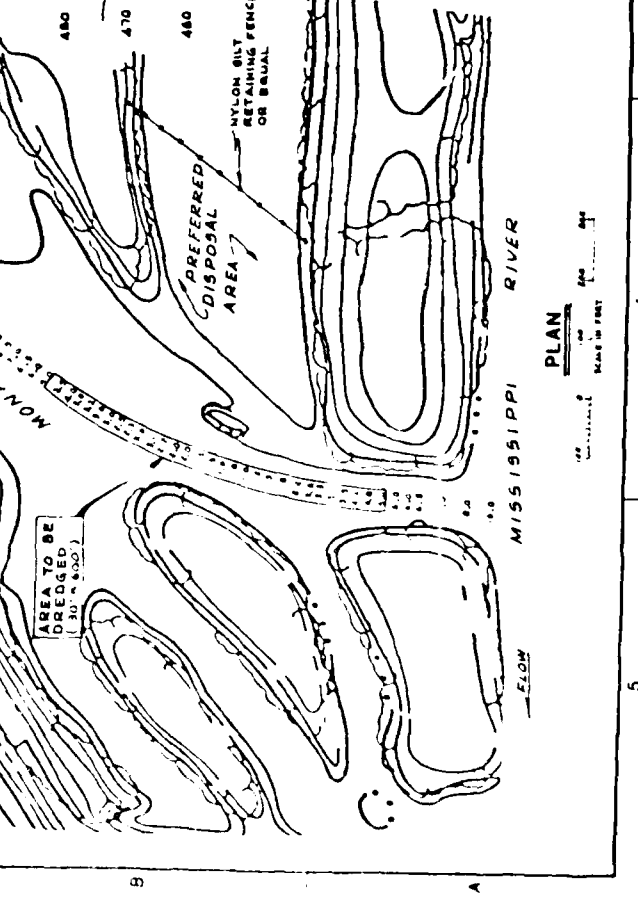
NOTES:

1. FLAT POOL NO. 21 ELEV. 470.0
2. SOUNDINGS ARE ADJUSTED TO FLAT POOL ELEVATION.
3. FALLEN TREES WITHIN THE DREDGING LIMITS SHALL BE REMOVED AND PLACED IN DISPOSAL AREA.

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
MOBILE DISTRICT, ALABAMA

MISSISSIPPI RIVER
POOL NO. 21
MONKEY CHUTE
BACKWATER DREDGING
SITE MAPS, PLAN & SECTION

SCALE: AS SHOWN



SECTION 404(b)(1) EVALUATION



REPLY TO
ATTENTION OF
NCRPD-E

DEPARTMENT OF THE ARMY
ROCK ISLAND DISTRICT CORPS OF ENGINEERS
CLOCK TOWER BUILDING - P O BOX 2004
ROCK ISLAND ILLINOIS 61204 2004

UPPER MISSISSIPPI RIVER SYSTEM -
ENVIRONMENTAL MANAGEMENT PROGRAM

MONKEY CHUTE RESTORATION PROJECT
POOL 21, MARION COUNTY, MISSOURI

CLEAN WATER ACT
SECTION 404(b)(1) EVALUATION

SEPTEMBER 1986

UPPER MISSISSIPPI RIVER SYSTEM -
ENVIRONMENTAL MANAGEMENT PROGRAM

MONKEY CHUTE RESTORATION PROJECT
POOL 21, MARION COUNTY, MISSOURI

CLEAN WATER ACT
SECTION 404(b)(1) EVALUATION

TABLE OF CONTENTS

| <u>Subject</u> | <u>Page</u> |
|--|-------------|
| I. PROJECT DESCRIPTION | 1 |
| Location | 1 |
| General Description | 1 |
| Authority and Purpose | 1 |
| General Description of Fill Material | 2 |
| Description of the Proposed Discharge Site | 2 |
| Description of Disposal Method | 2 |
| II. FACTUAL DETERMINATION | 2 |
| Physical Substrate Determination | 2 |
| Water Circulation, Fluctuation, and Salinity Determinations | 3 |
| Suspended Particulate/Turbidity Determinations | 3 |
| Contaminant Determinations | 3 |
| Aquatic Ecosystem and Organism Determinations | 3 |
| Proposed Disposal Site Determinations | 4 |
| Determination of Cumulative Effects on the Aquatic Ecosystem | 4 |
| Determination of Secondary Effects on the Aquatic Ecosystem | 4 |
| III. FINDINGS OF COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE | 4 |
| Adaptation of the Section 404(b)(1) Guidelines to This Evaluation | 4 |
| Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Sites Which Would Have Less Adverse Impact on the Aquatic Ecosystem | 4 |
| Compliance With Applicable State Water Quality Standards | 5 |
| Compliance With Applicable Toxic Effluent Standards or Prohibition Under Section 307 of the Clean Water Act | 5 |
| Compliance With Endangered Species Act of 1973 | 5 |
| Compliance With Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research and Sanctuaries Act of 1972 | 5 |
| Evaluation of Extent of Degradation of the Waters of the United States | 5 |
| Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem | 6 |
| Conclusion | 6 |

TABLE OF CONTENTS (Cont'd)

List of Plates

| No. | Title |
|-----|---|
| 1 | Mississippi River Pool 21, Backwater Dredging, Site Maps, Plan and Section |

UPPER MISSISSIPPI RIVER SYSTEM -
ENVIRONMENTAL MANAGEMENT PROGRAM

MONKEY CHUTE RESTORATION PROJECT
POOL 21, MARION COUNTY, MISSOURI

CLEAN WATER ACT
SECTION 404(b)(1) EVALUATION

I - PROJECT DESCRIPTION

LOCATION.

Monkey Chute is an old Mississippi River side channel located just upstream of Lock and Dam 21 at approximate river mile (RM) 325. The chute lies west of the navigation channel and is within the State of Missouri.

GENERAL DESCRIPTION.

The upstream end of Monkey Chute was cut off many years ago by deposition of sediment. Sedimentation in the lower end of Monkey Chute is now becoming acute. In severe cases when Pool 21 is below normal, sediment deposits can strand aquatic organisms and cause stagnation by isolating the chute from the river. Monkey Chute is extensively used by waterfowl, particularly during the spring migration, and fishery studies have shown that this is a very productive fish area as well.

As recommended by the Missouri Department of Conservation (MDOC), a small dredge cut of about 3,000 cubic yards will be made using a mudcat dredge on the lower end of the chute, as shown on plate 1. The dimensions of the dredge cut will be about 600 feet long by 30 feet wide, with an average depth of about 4 feet. The dredged material will be pumped into the sand/mud area immediately adjacent to the dredge cut (see plate 1). At the upstream end of the disposal area, a nylon silt retaining fence will be constructed in order to hold the dredged material in place and to act as a silt screen. Hay bales also will be used to dissipate the force from the dredge outfall pipe during disposal.

AUTHORITY AND PURPOSE.

Public Law (PL) 95-502 authorized the construction of a new dam and 1,200-foot lock at Alton, Illinois, and directed the Upper Mississippi River Basin Commission to prepare a comprehensive Master Plan for the Management of the Upper Mississippi River System. The Basin Commission completed the Master Plan report and submitted it to Congress on

1 January 1982. The report recommended an environmental management program that included construction of habitat rehabilitation and enhancement projects.

The 1985 Supplemental Appropriations Bill (PL 99-88), signed into law by President Reagan on 15 August 1985, provides authorization and appropriation for an environmental management program for the Upper Mississippi River System that includes fish and wildlife habitat rehabilitation and enhancement. The proposed project would be funded under this authorization.

The purpose of the proposed project is to restore the water connection between the Mississippi River and Monkey Chute for the benefit of riverine aquatic resources.

GENERAL DESCRIPTION OF FILL MATERIAL.

Silt and fine sand dredged from the opening of Monkey Chute will be pumped into the sand/mud area immediately adjacent to the dredge cut (see plate 1).

DESCRIPTION OF THE PROPOSED DISCHARGE SITE.

The proposed discharge site lies immediately above Lock and Dam 21, as shown on plate 1.

DESCRIPTION OF DISPOSAL METHOD.

A mudcat dredge will be used to pump the silt into the proposed disposal area.

II - FACTUAL DETERMINATION

PHYSICAL SUBSTRATE DETERMINATION.

The substrate in the project area consists of mostly silt and some fine sand. Loss of some benthic species may occur from the filling activities. However, the area to be dredged is relatively small and impacts should be minor and temporary. Recolonization and stabilization of the benthic community should occur within one season.

WATER CIRCULATION, FLUCTUATION, AND SALINITY DETERMINATIONS.

A water quality parameter that could be violated by filling activities would be the standards for turbidity. However, this condition would be minor and short-term. Dredging will be done during October through April to reduce un-ionized ammonia-nitrogen concentrations (see Contaminant Determinations section below).

The proposed filling activities would not appreciably change the flow regime and would not cause water level fluctuations beyond what currently exist by the natural river.

The proposed project involves a fresh water system. Salinity gradients, therefore, do not apply.

SUSPENDED PARTICULATE/TURBIDITY DETERMINATIONS.

Placement of silt material in the proposed disposal area may produce increases in suspended particulate matter and turbidity. However, these effects should be minor and of a temporary nature. Also, a nylon silt retaining fence will be constructed at the upstream end of the disposal area in order to hold the dredged material in place and to act as a silt screen.

CONTAMINANT DETERMINATIONS.

The elutriate test was used to simulate river conditions that would occur during dredging. The elutriate test results indicate that if dredging were to occur under conditions observed during sampling, high un-ionized ammonia-nitrogen concentrations may result. However, the percent of ammonia-nitrogen in the un-ionized form is dependent on pH and water temperature. Therefore, dredging will be done when the pH and temperature would be lower (pH less than 8.0; water temperature less than 15°C) to reduce the un-ionized ammonia-nitrogen concentrations. These conditions should exist from October through April.

AQUATIC ECOSYSTEM AND ORGANISM DETERMINATIONS.

Losses of some nektonic and planktonic organisms during construction would be expected. The greatest losses would be of drifting organisms which would be unable to move out of the area. Some losses of benthic species also may occur. Recolonization and stabilization of the benthic community after construction should occur within one season.

Minor disruption of the aquatic food chain could occur during construction. However, recolonization of aquatic organisms should occur within one season, and predator species would move back into the area.

A listing of the Federal and State of Missouri species of fauna and flora identified as threatened or endangered was consulted, and the proposed project should have no adverse impacts upon any of the species listed.

PROPOSED DISPOSAL SITE DETERMINATIONS.

Filling activities for the proposed project should not violate water quality standards if dredging is done between October through April. No long-term impacts are anticipated.

The proposed project would have no appreciable negative effects on the human use of the area, and, after construction, the proposed project should improve access for fishing and boating activities that occur in the area.

DETERMINATION OF CUMULATIVE EFFECTS ON THE AQUATIC ECOSYSTEM.

The silt material would be placed into the disposal site only once. There would not be any cumulative effects due to subsequent discharge of material.

DETERMINATION OF SECONDARY EFFECTS ON THE AQUATIC ECOSYSTEM.

No secondary effects on the aquatic ecosystem are anticipated due to the proposed dredging and disposal of material. The dredged material will be stabilized by planting a water-tolerant fast-growing grass species after disposal.

III - FINDINGS OF COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE

ADAPTATION OF THE SECTION 404(b)(1) GUIDELINES TO THIS EVALUATION.

No significant adaptations of the guidelines were made relative to this evaluation.

EVALUATION OF AVAILABILITY OF PRACTICABLE ALTERNATIVES TO THE PROPOSED DISCHARGE SITES WHICH WOULD HAVE LESS ADVERSE IMPACT ON THE AQUATIC ECOSYSTEM.

The actual amount of material to be placed into the disposal site has been minimized to the extent possible.

COMPLIANCE WITH APPLICABLE STATE WATER QUALITY STANDARDS.

Compliance with State water quality standards will be achieved by maintaining turbidity and other parameters below the State standards. Section 401 Water Quality Certification from the State of Missouri has been received (see letter dated 21 August 1986 in the correspondence attachment). Circulation of the Environmental Assessment and this Section 404(b)(1) Evaluation would constitute public and agency review. Filling activities should not violate water quality standards of the State of Missouri, since dredging will be done when the water temperature is less than 15°C. and the pH less than 8.0 to avoid violation of the standard for un-ionized ammonia-nitrogen.

COMPLIANCE WITH APPLICABLE TOXIC EFFLUENT STANDARDS OR PROHIBITION UNDER SECTION 307 OF THE CLEAN WATER ACT.

It is not anticipated that the project would introduce toxic substances into nearby waters or result in appreciable increases in existing levels of toxic materials. The proposed action will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

COMPLIANCE WITH ENDANGERED SPECIES ACT OF 1973.

As discussed previously, no significant impact to federally listed endangered species is anticipated as a result of this project.

COMPLIANCE WITH SPECIFIED PROTECTION MEASURES FOR MARINE SANCTUARIES DESIGNATED BY THE MARINE PROTECTION, RESEARCH AND SANCTUARIES ACT OF 1972.

The project is in a fresh water inland river system. No marine sanctuaries are involved.

EVALUATION OF EXTENT OF DEGRADATION OF THE WATER OF THE UNITED STATES.

The proposed placement of silt and sand material will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic life and other wildlife will not be adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values will not occur.

APPROPRIATE AND PRACTICABLE STEPS TAKEN TO MINIMIZE POTENTIAL ADVERSE
IMPACTS OF THE DISCHARGE ON THE AQUATIC ECOSYSTEM.

A nylon silt retaining fence will be constructed at the upstream end of the disposal area in order to hold the dredged material in place and to act as a silt screen. Hay bales also will be used to dissipate the force from the dredge outfall pipe during disposal. The dredged material will be stabilized by planting a water-tolerant, fast-growing grass species after disposal. As specified by the Section 401 Water Quality Certification, dredging will be done when the water temperature is less than 15°C. and the pH less than 8.0 to avoid violations of the standard for un-ionized ammonia-nitrogen.

CONCLUSION.

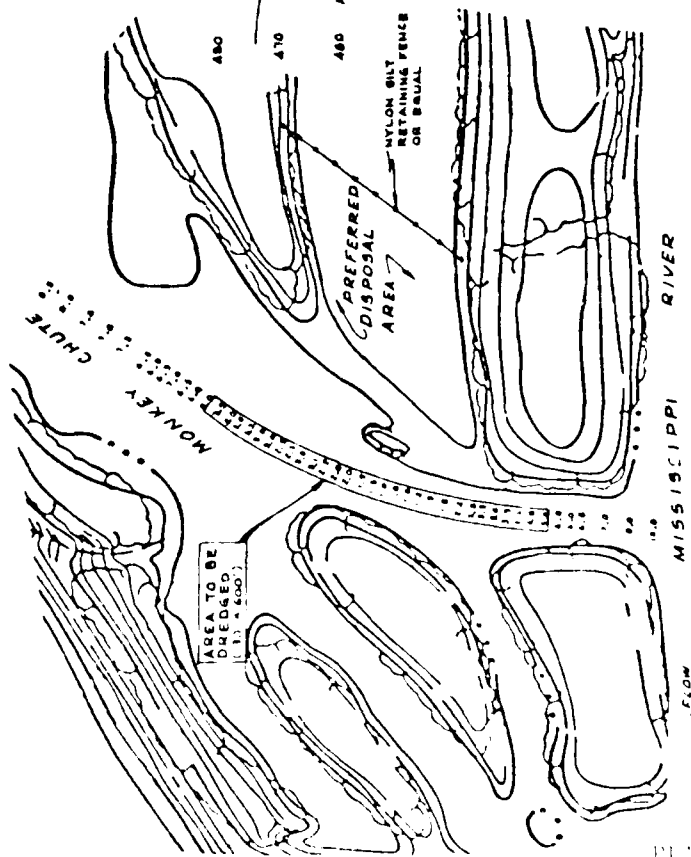
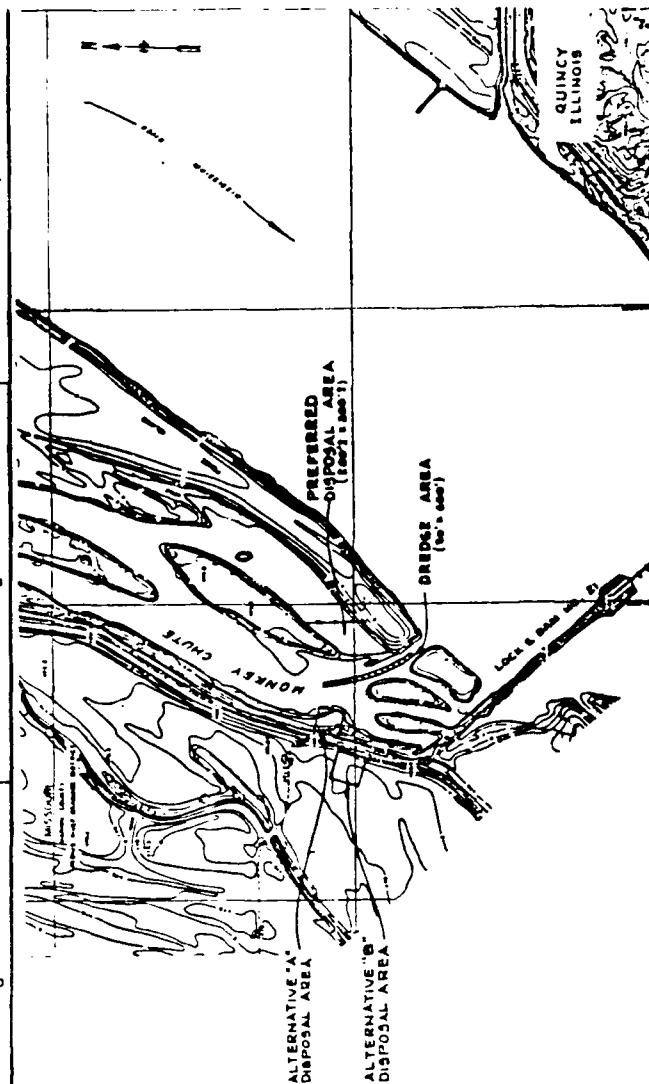
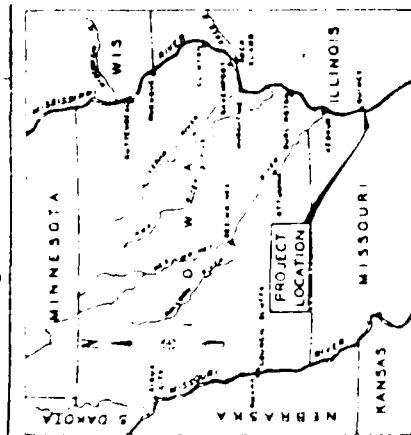
On the basis of the guidelines, the proposed disposal site for the discharge of fill material for the Monkey Chute Restoration Project is specified as complying with the requirements of the guidelines.

6 February 1987

Date

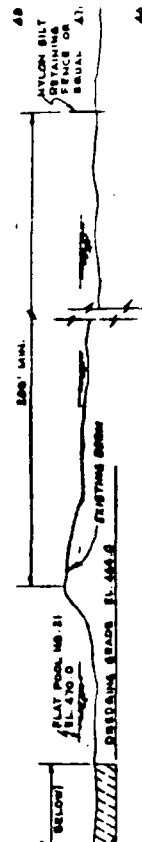


Neil A. Smart
Colonel, Corps of Engineers
District Engineer



LOCATION MAP

MONKEY CHUTE DREDGE CUT



NOTE: MAINTAIN A 30' WIDE TOP WIDTH SIDE SLOPES MAY SHOWN.

TYPICAL SECTION

NO SCALE

NOTES:

1. FLAT POOL NO. 21 ELEV. 470.0
2. SOUNDINGS ARE ADJUSTED TO FLAT POOL ELEVATION.
3. FALLEN TREES WITHIN THE DREDGING LIMITS SHALL BE REMOVED AND PLACED IN DISPOSAL AREA.

| | | | |
|--|------------|---|--------|
| U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ROCK ISLAND, ILLINOIS | | MISSISSIPPI RIVER POOL 21 MONKEY CHUTE BACKWATER DREDGING SITE MAPS, PLAN & SECTION | |
| Drawn by | Checked by | Scale | Sheet |
| C.D.B. | C.D.B. | 1" = 100' | 1 of 1 |
| Revised by | Revised by | Scale | Sheet |
| C.D.B. | C.D.B. | 1" = 100' | 1 of 1 |
| Revised by | Revised by | Scale | Sheet |
| C.D.B. | C.D.B. | 1" = 100' | 1 of 1 |

CORRESPONDENCE



MISSOURI DEPARTMENT OF CONSERVATION

MAILING ADDRESS:
P.O. Box 180
Jefferson City, Missouri 65102-0180

STREET LOCATION:
2901 West Truman Boulevard
Jefferson City, Missouri

Telephone 314/751-4115
LARRY R. GALE, Director

May 15, 1986

Colonel William C. Burns, Jr.
District Engineer
Rock Island District, Corps of Engineers
Clock Tower Building
Rock Island, Illinois 61201

Dear Colonel Burns:

This letter is in reference to the Upper Mississippi River, Environmental Management Program, Monkey Chute Habitat Rehabilitation Project. The Monkey Chute area is located along the Missouri shoreline in Pool 21 at approximate river mile 325.

As outlined in previous correspondence, we are recommending that a small dredge cut (estimated 7,500 cubic yards) be made in the lower end of the chute to assure that a water connection exists between the Mississippi River and the chute at all river stages.

We have proposed that the dredged material from this cut be disposed in a containment area to be constructed on land which adjoins Monkey Chute. The land is owned by the U.S. Government, Corps of Engineers. According to a 1951 agreement between the Corps of Engineers, the U. S. Fish and Wildlife Service and the Missouri Department of Conservation, this land was dedicated to wildlife management under the jurisdiction of our Department.

This small parcel of land is presently covered by a dense stand of willow and soft maple trees. The habitat value for terrestrial and/or wetland wildlife species is low. Elevating this parcel of land several feet with dredge spoil will provide the opportunity to experiment with reestablishing bottomland hardwood species of high value to a variety of riverine wildlife species.

COMMISSION

JEFF CHURAN
Chillicothe

JOHN POWELL
Rolla

JOHN B. MAHAFFEY
Springfield

RICHARD T. RE
East Prairie

Colonel Burns
May 15, 1986
Page Two

We look forward to continued cooperation with the Rock Island District in moving ahead with this habitat rehabilitation project. Please continue to direct future coordination on this matter to Mr. Norman P. Stucky at the above address.

Sincerely,



LARRY R. GALE
DIRECTOR

cc: PDR (Bruzewicz)
Rock Island District
Corps of Engineers

Dr. Frederick Brunner, Director
Department of Natural Resources



DEPARTMENT OF THE ARMY
ROCK ISLAND DISTRICT CORPS OF ENGINEERS
CLOCK TOWER BUILDING - P.O. BOX 2004
ROCK ISLAND ILLINOIS 61204 2004

June 24, 1986

REPLY TO
ATTENTION: CE

Planning Division

Mr. B. H. Rucker
Deputy State Historic
Preservation Officer
Division of Parks and
Historic Preservation
P.O. Box 176
Jefferson City, Missouri 65102

Dear Mr. Rucker:

The Rock Island District, U.S. Army Corps of Engineers, is planning to dredge cut a small (30-foot by 600-foot) channel leading into the Monkey Chute immediately upstream of Lock and Dam 21 in sec. 15, T. 39 N., R. 5 W., Marion County, Missouri.

The purpose of the project is habitat rehabilitation as part of the Rock Island District Upper Mississippi River System Environmental Management Program (UHRSEMP). An estimated 1,000 cubic yards of dredge material will be deposited at one of two alternative disposal sites in the immediate project area (map 1). An archeological survey was conducted to evaluate the potential impacts of the proposed project on significant cultural resources.

Rock Island District archeologists, Kenneth Barr and Charles Smith, conducted an archeological reconnaissance survey of the proposed project area on June 12, 1986. The area to be dredged is an existing channel. Proposed disposal area "A" is a recently accreted sand island with small willows starting to vegetate it. Proposed disposal site "P" is an open mud flat area located immediately adjacent to the Monkey Chute below the existing levee. Shovel tests to a depth of 20 cm at this site indicated layers of flood deposited silty clay down to the present water table. This landform would have no potential for containing significant cultural resources.

-2-

Based on these field observations, it is our opinion that the proposed projects will have No Effect on significant cultural resources. We request your comments on this project at your earliest convenience.

If you have any questions, please call Mr. Kenneth Barr at 309/789-6361, Ext. 340, or write to the following address:

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Planning Division
Clock Tower Building - P.O. Box 2004
Rock Island, Illinois 61204-2004

Sincerely,

Signed By
J. T. SCHNERRE

Dudley M. Hanson, P.E.
Chief, Planning Division

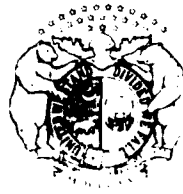
Enclosure

JOHN ASHCROFT

Governor

FREDERICK A. BRUNNER

Director



STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF PARKS, RECREATION, AND HISTORIC PRESERVATION

P.O. Box 176
Jefferson City, MO 65102
314-751-2479

Division of Energy
Division of Environmental Quality
Division of Geology and Land
Division of Management Science
Division of Parks, Recreation
and Historic Preservation

July 14, 1986

Dudley M. Hanson
Chief, Planning Division
Department of the Army
Rock Island Corps of Engineers
P.O. Box 2004
Rock Island, Illinois 61204-2004

Re: Proposed Channel, Monkey Chute Lock and Dam 21 (COE),
Marion County, Missouri

Dear Mr. Hanson:

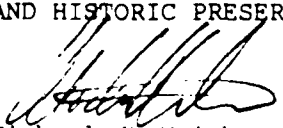
In response to your letter dated 24 June 1986 concerning the above-referenced project, the Missouri Historic Preservation Program has reviewed the information provided and we concur with your determination that the proposed undertaking will have "no effect" on any significant cultural resources. Therefore, we have no objection to the initiation of project activities.

However, if the currently defined project area or scope of project-related activities is changed or revised, or cultural materials are encountered during construction, the Missouri Historic Preservation Program must be notified and appropriate information relevant to such changes, revisions, or discoveries be provided for further review and comment, in order to ascertain the need for additional investigations.

If I can be of further assistance, please call 314/751-7958 or write.

Sincerely,

DIVISION OF PARKS, RECREATION,
AND HISTORIC PRESERVATION


Michael S. Weichman
Chief, Review and Compliance

MSW:ro



United States Department of the Interior

FISH AND WILDLIFE SERVICE

IN REPLY REFER TO:

ROCK ISLAND FIELD OFFICE (ES)

COM: 309-793-5800

1830 Second Avenue, Second Floor

FTS: 386-5800

Rock Island, Illinois 61201

July 28, 1986

Colonel William C. Burns, Jr.
District Engineer
U.S. Army Engineer District
Rock Island
Clock Tower Building, P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Colonel Burns:

This is our Fish and Wildlife Coordination Act Report for the Monkey Chute project located just above Lock and Dam 21 along the Missouri bank, Mississippi River mile 325.0. It has been prepared under the authority of and in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.); the National Environmental Policy Act of 1969, as amended; the Endangered Species Act of 1973, as amended; and in accordance with the Fish and Wildlife Service's Mitigation Policy.

Information for this report was provided by your staff, and a site meeting attended by representatives of the Missouri Department of Conservation, the Corps of Engineers and this Service. By copy of this report, we request the comments of the Missouri Department of Conservation.

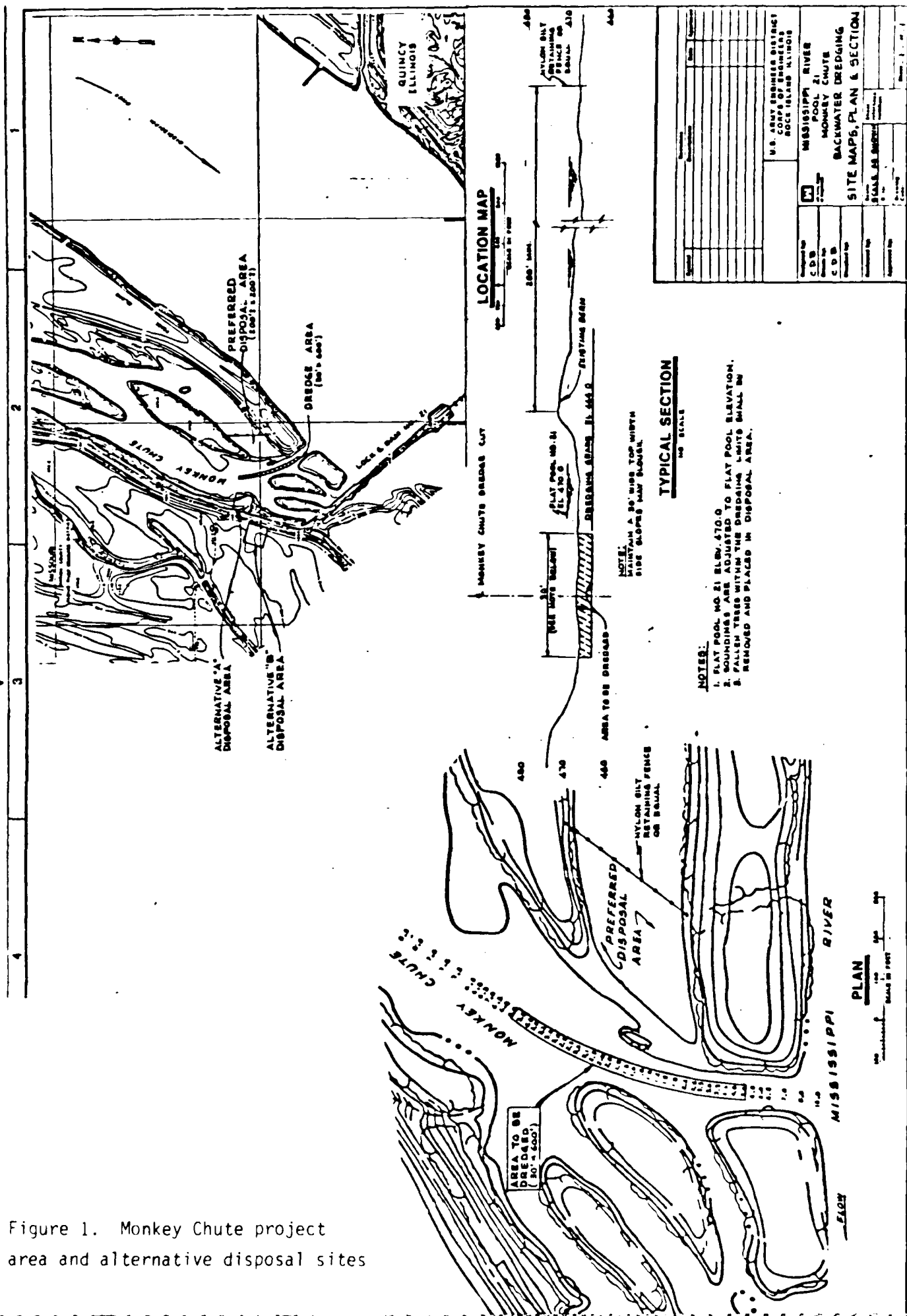
Project Description

The Monkey Chute project area totals about 228 acres of which about 170 are forested bottomlands and 58 acres are open water. The only access to the Mississippi River mainstem is an inlet located at the downstream end of the chute. This inlet has become extremely shallow with depths of less than a foot at flat pool. The proposed project would dredge out the shallow section of the inlet (30 feet x 600 feet), to a depth of 4 feet totaling about 3,000 cubic yards. The preferred disposal area for the material is a mud flat area (Figure 1). Two other alternative disposal sites include a disturbed field behind the levee of the Fabius River Levee and Drainage District, and a bottomland hardwood area riverward of the levee.

Fish and Wildlife Resources of the Project Area

Fish

Monkey Chute is an important area for both sport fishing and fish reproduction. Fish surveys were conducted by the Missouri Department of Conservation (MoDOC) for the years 1983 and 1984. Bluegill were found



spawning in the chute and many other species likely use the area for both spawning and nursery habitat. The surveys also indicate a diverse and abundant sport fishery. For both years, white crappie and bluegill comprised 57% of the collection using electrofishing. Other species collected include black crappie, buffalo, flathead catfish, channel catfish and largemouth bass (Table 1). The river biologist for MoDOT found the Monkey Chute fishery to be one of the best for any Mississippi River backwater he had seen. One reason for the good fishery is that holes were dredged in the backwater for levee fill. These holes provide habitat diversity and help maintain water quality. In summer, the deeper water helps maintain satisfactory dissolved oxygen levels while in winter, the deeper water helps minimize winter kill. Since there is no upstream opening, sedimentation of the backwater over the years has been reduced.

Wildlife

Important wildlife species present in the Monkey Chute area include muskrats, raccoon, beaver, deer, and the Missouri State Endangered river otter. Tracks recognized by State and Federal biologists to be those of the river otter were observed at the site meeting on June 12, 1986. Since river otters have been released in the area by Missouri biologists, their occurrence in Monkey Chute is likely.

Waterfowl use Monkey Chute as a migratory stop-over. In addition, wood ducks and mallards likely use the area for nesting.

Preferred Disposal Site

The preferred disposal area was a mud flat at the time of our June 12 visit. The mud flat appeared to be part of an old slough. Small willow shoots had emerged and would soon likely cover the mudflat. At the time of the site visit, the preferred disposal area provided no cover for wildlife or fish but obviously was used as a travel lane. Turtles and crayfish may also be using the area for nesting or resting though none were seen.

Alternative Disposal Sites A and B

Alternative disposal area A is located adjacent to the proposed cut and riverward of the levee. The area is composed primarily of bottomland hardwoods with silver maple dominating. Other species include willow, elm, cottonwood and sycamore. Some mature trees are present, over 20 feet tall. A wide strip of mud flat/willow seedlings is present between the woodland and the chute.

Disposal alternative B is a frequently farmed field landward of the levee. Wildlife values in the area are marginal since the field is plowed and planted when proper drainage permits.

Endangered Species

To facilitate compliance with Section 7(c) of the Endangered Species Act of 1973, as amended, Federal Agencies are required to obtain from the Fish and Wildlife Service information concerning any species, listed or proposed to be listed, which may be present in the area of a proposed action. Therefore, we

Table 1. Species list for fish collected by electrofishing from Monkey Chute, Pool 21, Mississippi River, 6-13-83.

| <u>Species</u> | <u>Number</u> | <u>% of Total</u> |
|-----------------------|---------------|-------------------|
| White crappie | 215 | 32 |
| Bluegill | 167 | 25 |
| Black crappie | 9 | 1 |
| Gizzard shad | 91 | 14 |
| Smallmouth buffalo | 33 | 5 |
| Drum | 18 | 3 |
| River carpsucker | 11 | 2 |
| Carp | 60 | 9 |
| Bigmouth buffalo | 29 | 4 |
| Flathead catfish | 3 | — |
| Largemouth bass | 16 | 2 |
| Channel catfish | 2 | — |
| Orangespotted sunfish | 4 | — |
| Warmouth | 7 | 1 |
| Brook silverside | 1 | — |
| Black bullhead | 3 | — |
| Golden shiner | 2 | — |
| Green sunfish | 1 | — |
| Bowfin | <u>2</u> | — |
| Total | 674 | |
| No. Species | 19 | |
| No./Hour | 674 | |

are furnishing you the following list of species which may be present in the concerned area:

| <u>Classification</u> | <u>Common Name</u> | <u>Scientific Name</u> | <u>Habitat</u> |
|-----------------------|---------------------------------|---|---|
| Endangered | Fat Pocketbook Pearly Mussel | <u>Potamilus capax</u> | Mississippi River (Marion County) |
| Endangered | Bald Eagle | <u>Haliaeetus</u> <u>leucocephalus</u> | Breeding Wintering |

Dredging out the backwater and placing the material in any of the three alternative disposal sites will not affect habitat suitable for the fat pocketbook pearly mussel. Since no trees will be cleared and no work will be conducted during winter, the project will also not affect the bald eagle.

This precludes the need for further action on this project as required under Section 7 of the Endangered Species Act of 1973, as amended. Should this project be modified or new information indicate endangered species may be affected, consultation should be initiated.

State and Federal biologists at the June 12, 1986 on-site meeting determined that proposed dredging or filling would have no effect on the State Endangered river otter. The disturbances are temporary and areas disturbed are not denning sites for the otter. As their range extends to 30 miles the river otter may escape the temporary disturbances.

Project Impacts on Other Fish and Wildlife Resources

The proposed project should result in many benefits to the fish and wildlife resources of Monkey Chute. The dredging should prevent the complete closure of the downstream access. This will help maintain water quality levels during critical periods, particularly dissolved oxygen. It will also permit the movement of fish in and out of Monkey Chute; allowing the entrance of spawning adults and release of the adults and young.

The dredging will remove silty substrate which contains invertebrate larvae of species such as mayflies, caddisflies and chironomids. There was no evidence at the site that silt-tolerant mussel species were present in large numbers. The relatively small area to be dredged should not affect these populations.

To minimize adverse effects from the filling, a nylon silt screen should be placed at the downstream end of the mudflat area to be filled. This will prevent most of the silty material from reentering the waterway. To be effective, however, the bottom of the screen must be sealed all along its edge and the force of the discharge must be dissipated. This may be accomplished by surrounding the end of the pipe with hay bales. Filling the mudflat will also benefit the wildlife resource provided the area is revegetated with trees and shrubs beneficial to wildlife, as planned. Filling the mudflat area should not significantly affect populations of species dwelling therein or the habitat. Through revegetation efforts, plant species more beneficial to wildlife should repopulate the area.

Effects from disposal in area A would be minimized if the mature, valuable trees remained intact and unharmed and if the entire disposal area were bermed. After disposal, the area could be enhanced by grading the berm and planting open areas with trees and shrubs beneficial to wildlife.

Impacts resulting from the disposal of material in the agricultural field (area B) would be minimal. Likewise, opportunities for enhancement would also be low since the area would likely be farmed again after the dredged material dried out.

In accordance with the Service mitigation policy (46 FR 7644-7655), we have evaluated the habitats to be impacted by the proposed project in order to determine their Resource Categories and proper Mitigation Goals. The Resource Categories and their Mitigation goals are as follows:

Resource Category 1 - Habitat is of high value and is unique and irreplaceable in the nation or ecoregion. Goal - no loss of existing habitat value. Guideline - the Service will recommend that all losses of existing habitat be prevented as these one-of-kind areas cannot be replaced. Insignificant changes are acceptable provided they will have no cumulative impact.

Resource Category 2 - Habitat is of high value and is relatively scarce or becoming scarce in the nation or ecoregion. Goal - no net loss of in-kind habitat value. Guideline - losses that cannot be otherwise avoided, minimized, rectified or eliminated over time can be compensated by replacement with the same kind of habitat so that the total or net loss is zero.

Resource Category 3 - Habitat is of high to medium value and is relatively abundant in the nation. Goal - no net loss of habitat value while minimizing loss of in-kind habitat value. Guideline - losses that cannot be otherwise avoided, minimized, rectified, eliminated over time or compensated by in-kind replacement can be compensated by replacement with other habitat types so that the total or net loss is zero.

Resource Category 4 - Habitat is of medium to low quality. Goal - minimize loss of habitat value. Guideline - the Service will make recommendations to avoid, minimize, rectify or eliminate losses over time depending on the significance of the potential loss. Such areas are good candidates for mitigation of Resource Category 2 and 3 losses by management or enhancement to increase their habitat value.

We have assigned the aquatic habitat of Monkey Chute to Category 2. Disposal area B is assigned Category 3 while disposal area A and the preferred disposal area are Category 4. No additional mitigation requirements are necessary for the affected habitats provided the project is constructed as proposed including the recommendations discussed below.

Recommendations

We recommend the following measures be incorporated into the project plans to minimize damage and promote the enhancement of fish and wildlife resources.

Preferred Disposal Area:

1. Silt screens should be placed across the downstream end of the mudflat with the bottom of the screen secured into the substrate.
2. The pressure at the outfall of the pipe should be dissipated by using hay bales or some other means.
3. The disposal area should be stabilized by planting a fast growing grass immediately after project completion. In the following year, trees and shrubs beneficial to wildlife should be planted.

Disposal Area A:


1. The disposal site should be bermed to minimize sediments reentering the waterway.
2. Tree clearing should be minimized, particularly leaving the most mature specimens.
3. After completion of dredging, the disposal area should be seeded and revegetated as described for the preferred disposal area.

Disposal Area B:

No recommendations

We appreciate this opportunity to comment on the Monkey Chute project. If you have any questions, please contact Jody Millar or me.

Sincerely,



Richard C. Nelson
Field Supervisor

cc: MO DOC (Farabee, Stucky)

JOHN ASHCROFT

Governor

FREDERICK A. BRUNNER

Director



STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL QUALITY

P.O. Box 176
Jefferson City, MO 65102
314-751-3241

Division of Energy
Division of Environmental Quality
Division of Geology and Land Survey
Division of Management Services
Division of Parks and
Historic Preservation

10.061
07110001-01-00

August 11, 1986

CERTIFIED MAIL P062013017

Mr. Doyle W. McCully, Chief
Engineering Division
Rock Island District, Corps of Engineers
P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Mr. McCully:

The Department of Natural Resources, Water Pollution Control Program, has reviewed your request for water quality certification for the proposed dredging access from the main channel of the Mississippi River to Monkey Chute at Upper Mississippi River Mile 325.0. This office certifies that the proposed activity apparently will not violate applicable Water Quality Standards, 10 CSR 20-7.031, subject to the following conditions:

1. The dredging must occur when the water temperature is less than 15° C and the pH is less than 8.0 to avoid violations of the Missouri Water Quality Standards for un-ionized ammonia-nitrogen.
2. A National Pollutant Discharge Elimination System (NPDES) permit must be obtained from the Department of Natural Resources prior to any discharge of return water from the dredged disposal basin.

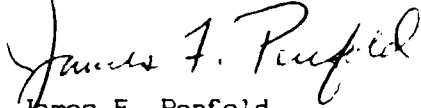
Water Quality Standards must continue to be met during the operation. If a violation of the Standards is found to exist because of this operation, the Corps of Engineers will be notified and the certification may be withdrawn.

Mr. Doyle W. McCully
August 11, 1986
page 2

This certification is being issued under Section 401 of
Public Law 95-217, the Clean Water Act of 1977.

Sincerely,

WATER POLLUTION CONTROL PROGRAM



James F. Penfold
Chief, Compliance/Review Section

JFP:epc

cc: Mr. Bob Barber, U.S. Environmental Protection Agency
Mr. Joe Tieger, U.S. Fish and Wildlife Service
Mr. Norm Stucky, Department of Conservation

JOHN ASHCROFT
Governor

FREDERICK A. BRUNNER
Director



STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL QUALITY

P.O. Box 176
Jefferson City, MO 65102
314-751-3241

Division of Energy
Division of Environmental Quality
Division of Geology and Land Survey
Division of Management Services
Division of Parks and
Historic Preservation

August 21, 1986

Mr. Doyle W. McCully, Chief
Engineering Division
Rock Island District, Corps of Engineers
P.O. Box 2004
Rock Island, IL 61204-2004

Dear Mr. McCully:

On August 11, 1986, the Department of Natural Resources issued water quality certification for the proposed dredging of approximately 2,800 cubic yards of material at the mouth of Monkey Chute in the Mississippi River at Upper Mississippi River Mile 325.0. The certification contained a special condition which required that the Corps of Engineers obtain a National Pollutant Discharge Elimination System (NPDES) permit from the Department of Natural Resources prior to any discharge of return water from the disposal basin.

As a result of a follow-up conversation with your office, we understand that the dredged material will not be pumped into a disposal basin but will be pumped onto the island in Monkey Chute. A silt retaining fence or similar structure will be constructed to retain the dredged material on site. Since there will not be any disposal basin with a return water discharge, no NPDES permit would be required. Therefore the second special condition of the water quality certification is not appropriate and is removed. The first condition of the certification remains in effect.

If you have any questions, please contact me or Mr. Earl Pabst of my staff at 314/751-1299.

Sincerely,

WATER POLLUTION CONTROL PROGRAM

A handwritten signature in cursive script that reads "James F. Penfold".

James F. Penfold
Chief, Compliance/Review Section

JFP/epb

cc: Mr. Norm Stucky, Department of Conservation

DISTRIBUTION LIST

DISTRIBUTION LIST FOR
MONKEY CHUTE RESTORATION PROJECT
POOL 21, UPPER MISSISSIPPI RIVER
MARION COUNTY, MISSOURI

DISTRIBUTION -- EXTERNAL

NC
CC

HONORABLE JOHN C. DANFORTH, UNITED STATES SENATOR
815 OLIVE ST. SUITE 1967, ST. LOUIS, MO 63101

HONORABLE THOMAS F. HARTON, UNITED STATES SENATOR
815 OLIVE ST. ROOM 224, ST. LOUIS 63101

HONORABLE HAROLD L. VOLKMER, REPR. SENIATIVE IN CONGRESS
FEDERAL BUILDING, ROOM 370
HANNIBAL MO 63401

DIRECTOR, ADVISORY COUNCIL ON HISTORIC PRESERV
OLD PD BLDG #809, 1100 PENNSYLVANIA AVENUE NW
WASHINGTON DC 20004

OFFICE OF ENVIRONMENTAL PROTECTION, DEPARTMENT OF INTERIOR
14TH & C STREETS NE - ROOM 4201, WASHINGTON DC 20240

MR RICHARD NELSON - FIELD SUPERV, U.S.F. SH & WILDLIFE SERVICE
1551 SECOND AVE. - 2ND FLOOR, ROCK ISLAND, IL 61201

REGIONAL DIRECTOR, REGION 3, U.S.F. SH & WILDLIFE SERVICE
FEDERAL BLDG FORT SNELLING, TWIN CITIES MN 55111

MR VALDAS J ADAMKUS - ADMINISTRATOR, US ENVIRONMENTAL PROTECTION AGCY
237 S DEARBORN ST, CHICAGO IL 60604

DIRECTOR, FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION VII, 911 WALNUT STREET - ROOM 300
KANAS CITY MO 64106

REGIONAL ADMINISTRATOR, FEDERAL HIGHWAY ADMIN
REGION VII, PO BOX 19715
KANAS CITY MO 64101

STATE COORDINATOR, SOIL CONSERVATION SERVICE
550 MANDIVER DRIVE, COLUMBIA MO 65201

REGIONAL FORESTER, FOREST SERVICE
US DEPT OF AGRICULTURE, 315 W. WELLS ST. AVE-SUITE 500
MILWAUKEE WI 53203

ADMINISTRATIVE COPIES TO BE DISTRIBUTED EXCEPT AS INDICATED

DISTRIBUTION -- EXTERNAL

NO
COPIES

12

DIVISION ENGINEER, US ARMY ENGINEER DIVN-NORTH CENTRAL
ATTN NCOPD, 536 S CLARK STREET
CHICAGO IL 60605

MS HOLLY STORKER, UPPER MISS RIVER BASIN ASSN
415 HAMM BUILDING, 408 ST PETER STREET
ST PAUL MN 55102

HONORABLE JOHN ASHCROFT, GOVERNOR OF MISSOURI
STATE CAPITAL, JEFFERSON CITY MO 65101

OFFICE OF ADMINISTRATION, DIVN OF BUDGET & PLANNING
PO BOX 109, STATE CAPITAL
JEFFERSON CITY MO 65101

DIRECTOR, WATER RES PLNG PROGRAM
DIVISION OF ENVIRONMENTAL QUALITY, P.O. BOX 1368
JEFFERSON CITY, MO 65102

LARRY P GALE - DIRECTOR, MISSOURI DEPT OF NATURAL RESOURCES
PO BOX 140, JEFFERSON CITY MO 65102

NORMAN STUCKY, MISSOURI DEPT OF CONSERVATION
PO BOX 170, JEFFERSON CITY MO 65102

2

DIRECTOR, MISSOURI NATURAL RESOURCES COUNCIL
PO BOX 176, JEFFERSON CITY MO 65101

CHIEF ENGINEER, MISSOURI STATE HIGHWAY DEPT
STATE HIGHWAY COMMISSION BLDG, PO BOX 270
JEFFERSON CITY MO 65101

HONORABLE NORMAN L. MERRILL, MISSOURI SENATOR
MONTICELLO, MO 65457

HONORABLE LEO O'BORN, MISSOURI HOUSE OF REPRESENTATIVES
STATE CAPITAL, JEFFERSON CITY MO 65102

COUNTY ATTORNEY, COURT HOUSE
HAMILTON COUNTY, CALMYRA, MO 65451

COPIES OF THIS DOCUMENT ARE DISTRIBUTED AS INDICATED

DISTRIBUTION -- EXTERNAL

NC
CC

COUNTY CLERK, MARION COUNTY COURT HOUSE
PALMYRA, MO 63461

COUNTY ENGINEER, COURT HOUSE
MARION COUNTY, PALMYRA, MO 63461

CHAIRMAN, MARION CNTY COURT
COUNTY COURT HOUSE, PALMYRA, MO 63461

MR. GEORGE PACE, MANAGER, CHAMBER OF COMMERCE
623 BROADWAY, HANNIBAL, MO 63401

THE MAYOR & CITY COUNCIL, CITY HALL
321 BROADWAY, HANNIBAL, MO 63401

CARROL ROBBINS, MARION CNTY SOIL & WATER CONSV DIST
RR 1, PALMYRA, MO 63461

HANNIBAL FREE PUBLIC LIBRARY, 207 SOUTH FIFTH STREET
HANNIBAL, MO 63401

PALMYRA PUBLIC LIBRARY, 301 S. MAIN ST.
PALMYRA, MO 63461

MS CAROLYN R EFFENSBERGER, SIERRA CLUB
536 SOUTH WABASH, SUITE 525
CHICAGO IL 60605

MR ALBERT FITTINGER, SIERRA CLUB
401 N MICHIGAN AVE, SUITE 2700
CHICAGO IL 60611

PAUL HANSEN, IZAAK WALTON LEAGUE
UPPER MISSISSIPPI REGNL OFC, 6601 AUTO CLUB ROAD
MINNEAPOLIS, MN 55431

JANE ELDER, THE SIERRA CLUB
214 N HENRY ST SUITE 203, MADISON WI 53703

THE MOBILE R-POST, HANNIBAL, MO 63401

SEVEN COPIES DISTRIBUTED EXCEPT AS INDICATED

DISTRIBUTION -- EXTERNAL

NC
CCPIFS4

NEWS ROOM, KIMO RADIO
HANNIBAL, MO 63401

NEWS ROOM, KSGC RADIO
HANNIBAL, MO 63401

SINGLE COPIES DISTRIBUTED EXCEPT AS INDICATED

DISTRIBUTION -- INTERNAL

COMMANDER, US ARMY ENGINEER DISTRICT, ROCK ISLAND, CLOCK
TOWER BLDG., ROCK ISLAND, IL 61204-2004

| | |
|-------------|-------------|
| ATTN: NCRDE | NCRPD |
| NCRRE-R | NCRPD-E |
| NCRED | NCRPD-R |
| NCRED-D | NCROD |
| NCRED-DG | NCROD-M |
| NCRED-H | NCROD-MC |
| NCRED-HH | NCRCD |
| NCRED-HQ | NCRAS-L (3) |

CORRESPONDENCE

A

P

P

E

N

D

I

X

B



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Federal Building, Fort Snelling
Twin Cities, Minnesota 55111

IN REPLY REFER TO:

ARW/WSS

17 JAN 1977

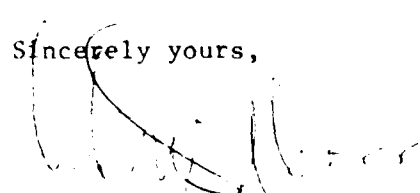
Mr. Andy Bruzewicz
U. S. Army Engineer District
Rock Island
Clock Tower Building
P. O. Box 2004
Rock Island, Illinois 61204-2004

Dear Mr. Bruzewicz:

For your information and use, a copy of the Compatibility Determination for the UMRS-EMP Monkey Chute project is enclosed.

If you have questions or need any further information, please let me know.

Sincerely yours,


Charles W. Gibbons
Facility Manager

Enclosure

COMPATIBILITY DETERMINATION

Mark Twain National Wildlife Refuge was established in 1958 under authority of the Fish and Wildlife Coordination Act (48 Stat. 401). The purpose of the Act is to develop, protect, rear and stock fish and wildlife on Federal lands, and to study effects of pollution on fish and wildlife. The lands acquired under the Act were for mitigation and enhancement of fish and wildlife in connection with water use projects on the Mississippi River. The main concern of the refuge is management of migratory waterfowl; other wildlife management responsibilities have been transferred to the State of Missouri.

The Army Corps of Engineers, as part of the environmental management program derived from construction of a new dam and enlarged lock at Alton, Illinois, has proposed to restore the water connection between the Mississippi River and Monkey Chute for the benefit of riverine aquatic resources, near river mile 325 in Pool 21. A dredge cut of about 3,000 cu. yds., about 600 feet long by 30 feet wide and 4 feet deep, is to be made in the lower end of the chute.

Impacts on refuge purposes are expected to be negligible. The project will help retain existing productive wildlife and fish habitat, provided stipulations as developed in the Fish and Wildlife Coordination Act Report and explained in the Environmental Assessment for Monkey Chute Restoration Project (September 1986) are incorporated.

Monkey Chute is extensively used by migratory waterfowl in the spring. The proposed dredge cut will retain Monkey Chute's connection to the Mississippi River, maintaining water circulation and access by fish and by the public. The stipulations are designed to prevent most of the dredged silty material from reentering the waterway.

Prepared by:

Jerry Cummings
Jerry Cummings, EMP Coordinator

12/04/86
Date

I have determined this project and its use of refuge lands is compatible with the purposes for which the refuge was established.

Determined by:

Chas. D. Stutter
Refuge Manager

12/04/86
Date

Reviewed by:

W. W. Ellis
Regional Refuge Supervisor (RF2)

12/10/86
Date

Concurred by:

James C. Sullivan
Acting Regional Director

12/16/86
Date

COMMENT LETTERS ON THE
ENVIRONMENTAL ASSESSMENT/SECTION 404(b)(1) EVALUATION

A

P

P

E

N

D

I

X

C

UPPER MISSISSIPPI RIVER SYSTEM -
ENVIRONMENTAL MANAGEMENT PROGRAM
DEFINITE PROJECT REPORT
FOR CONSTRUCTION

MONKEY CHUTE RESTORATION PROJECT
POOL 21, UPPER MISSISSIPPI RIVER
MARION COUNTY, MISSOURI

APPENDIX C
COMMENT LETTERS ON THE ENVIRONMENTAL ASSESSMENT/
SECTION 404(b)(1) EVALUATION

TABLE OF CONTENTS

| <u>Letter</u> | <u>Page</u> |
|--|-------------|
| U.S. Department of Agriculture, Soil Conservation Service, dated 25 November 1986 | C-1 |
| Missouri Department of Natural Resources, dated 3 December 1986 | C-2 |
| U.S. Environmental Protection Agency, Region VII, dated 10 December 1986 | C-3 |
| Missouri Clean Water Commission, Department of Natural Resources, Division of Environmental Quality, dated 30 December 1986 | C-4 |
| U.S. Department of the Interior, Fish and Wildlife Service, dated 14 January 1987 | C-6 |
| Rock Island District Letter to Missouri Clean Water Commission, Missouri Department of Natural Resources, dated 29 January 1987 | C-8 |



United States
Department of
Agriculture

Soil
Conservation
Service

555 Vandiver Drive
Columbia, Missouri
65202

November 25, 1986

Colonel Neil A. Smart
Rock Island District Corps of Engineers
Clock Tower Building
P.O. Box 2004
Rock Island, Illinois 61204-2004

ATTN: Planning Division

Dear Colonel Smart:

The environmental assessment for the Monkey Chute Restoration Project, Pool 21, Marion County, Missouri, has been reviewed by our office.

As it involves a dredge cut with no effect on prime farmland or other long-term damage to the environment, we do not have any comments.

Sincerely,

Paul F. Larson
State Conservationist

JOHN ASHCROFT
Governor

FREDERICK A. BRUNNER
Director



STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

OFFICE OF THE DIRECTOR
P.O. Box 176
Jefferson City, Missouri 65102
Telephone 314-751-4422

Division of Energy
Division of Environmental Quality
Division of Geology and Land Survey
Division of Management Services
Division of Parks, Recreation
and Historic Preservation

December 3, 1986

Colonel Neil A. Smart,
District Engineer
Rock Island District
Corps of Engineers
Clock Tower Building
P. O. Box 2004
Rock Island, IL 61204-2004

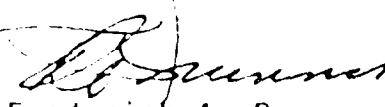
Dear Colonel Smart:

The Department of Natural Resources reviewed the
Environmental Assessment for the Monkey Chute Restoration
Project, Pool 21, Mississippi River, Marion County, Missouri.

This project is compatible with the development and
maintenance of established purposes of the Mississippi River
and should be constructed.

Sincerely,

DEPARTMENT OF NATURAL RESOURCES


Frederick A. Brunner, Ph.D., P.E.
Director

FAB:cme

cc: Mr. Larry Gale
Mr. Wayne Muri



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
726 MINNESOTA AVENUE
KANSAS CITY, KANSAS 66101

December 10, 1986

Colonel William C. Burns, Jr., USA
District Engineer
U.S. Army Engineer District, Rock Island
Clock Tower Building - P.O. Box 2004
Rock Island, Illinois 61204-2004

Attention: Planning Division

Dear Colonel Burns:

RE: Environmental Assessment Monkey Chute Restoration
Project Pool 21, Marion County, Missouri

In accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the Region VII Office of the Environmental Protection Agency has reviewed the above-referenced document. We have no objections to the implementation of the project as described.

Please keep this office apprised of any changes in the project which may require a NEPA action or Section 309 review.

Sincerely yours,

A handwritten signature in cursive script that reads "Edward C. Vest".

Edward C. Vest
Chief, EIS Section

JOHN ASHCROFT
Governor

FREDERICK A. BRUNNER
Director



STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL QUALITY

P.O. Box 176
Jefferson City, MO 65102

Division of Energy
Division of Environmental Quality
Division of Geology and Land Survey
Division of Management Services
Division of Parks, Recreation,
and Historic Preservation

December 30, 1986

Colonel William C. Burns
District Engineer
Rock Island Dist., Corps of Engineers
P.O. Box 2004
Rock Island, Illinois 61201

Re: Public Notice NCROD-S-070-0X6-1-146390, U.S.A.C.E.

Dear Colonel Burns:

The Department of Natural Resources has reviewed the above referenced public notice and has the following comments.

The applicant, Rock Island District, Corps of Engineers, needs to receive a flood plain development permit from Marion County, Missouri, for the proposed action. Marion County is participating in the National Flood Insurance Program, and regulates dredging and filling in the flood plains identified on the county's Flood Insurance Rate Map. Application should be made to the Marion County Planning and Zoning Commission, Palmyra, Missouri.

The Department of Natural Resources has no objection to the dredging of the chute to restore water flow. However, consideration should be given to depositing the spoil outside the flood plain where it would provide net flood plain management benefits.


Executive Orders 11988 and 11990 apply to this proposed activity. The Rock Island District has not addressed alternatives to deposition. The Department of Natural Resources suggests that there are alternatives which should be explored before a finding is made, and before a permit is issued.

Colonel William C. Burns
December 30, 1986
Page Two

We appreciate the opportunity to review and comment.

Sincerely,

MISSOURI CLEAN WATER COMMISSION


Charles A. Stieffermann, P.E.
Director of Staff

CAS:lbd

cc: Department of Conservation
U.S. Fish and Wildlife Service
U.S. Environmental Protection Agency, 404 Section



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Federal Building, Fort Snelling
Twin Cities, Minnesota 55111

IN REPLY REFER TO

AE/ES

JAN 14 1987

Colonel Neil A. Smart
District Engineer
Rock Island District, Corps of Engineers
Attention: Planning Division
Clock Tower Building
Post Office Box 2004
Rock Island, Illinois 61204-2004

Dear Colonel Smart:

The Fish and Wildlife Service has reviewed the Environmental Assessment that includes a Finding of No Significant Impact (FONSI) and Preliminary Section 404(b)(1) Evaluation for the Monkey Chute Restoration Project, Pool 21, Marion County, Missouri. Also, we have reviewed Public Notice MCROD-S-070-0X6-1-146390 dated November 4, 1986 of a Section 404 permit application by the U.S. Army Corps of Engineers, Rock Island District, for the same project. This project is being proposed under authority of the Supplemental Appropriations Bill (P.L. 99-88) as part of the Environmental Management Program for the Upper Mississippi River System.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. et seq.) and are consistent with the intent of the National Environmental Policy Act of 1969, the U.S. Fish and Wildlife Service's Mitigation Policy and Presidential Executive Orders 11988 and 11990. The Service finds that the assessment appears to comply with Federal laws that govern the proposed dredging and disposal activities. I concur with your determination that the proposed action will have no significant impact on the area's natural resources. More importantly, it should greatly improve an area that is presently considered to be declining in habitat quality.

I concur with the determination of the Refuge Manager, Mark Twain National Wildlife Refuge, that this project is compatible with the purpose for which the refuge was established provided that the recommendations in the Rock Island Field Office's Fish and Wildlife Coordination Act Report, dated July 28, 1986 and the following recommendations are incorporated into the project.

We recommend that:

- (1) A maximum effort be expended to ensure that the disposal area be stabilized with vegetation and/or rock (riprap). If rock is used as a bank stabilizer, we believe that benefits will accrue to certain fishes and other aquatic organisms.
- (2) A more thorough analysis of disposal options be made in the future.

- (3) A monitoring effort be established during disposal and following disposal to determine the relative success of the retaining fence.

The Fish and Wildlife Service would not object to the issuance of a permit for this project.

Sincerely yours,

(sgd) John Popovich
Acting Regional Director

bcc: WSS/FM, ARW, AF, AE, ES/FPC

RIPO MISO

Mark Twain NWR; Fish Assistance, Winona



DEPARTMENT OF THE ARMY
ROCK ISLAND DISTRICT CORPS OF ENGINEERS
CLOCK TOWER BUILDING - P.O. BOX 2004
ROCK ISLAND ILLINOIS 61204 2004

January 29, 1987

Planning Division

Mr. Charles A. Stiefermann, P.E.
Director of Staff
Missouri Clean Water Commission
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, Missouri 65102

Dear Mr. Stiefermann:

This is in response to your letter dated December 30, 1986, concerning Public Notice NCROD-S-070-0X6-1-146390 for the Monkey Chute Restoration Project, Pool 21, Marion County, Missouri. We appreciate your comments and consider them to be supplementary to the official comments provided by Dr. Frederick Brunner, Director of the Department of Natural Resources, in a letter dated December 3, 1986. A copy of Dr. Brunner's letter is enclosed for your information. The Environmental Assessment, which was prepared for the project and circulated concurrently for review with the Public Notice, addressed alternatives to disposal and the relationship of the proposed activity to Executive Orders 11988 and 11990.

Should you have additional questions, please call Mr. Andrew Bruzewicz, our Rock Island District Environmental Management Program Manager, at 309/788-6361, Ext. 203, or write to the following address:

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Planning Division
Clock Tower Building - P.O. Box 2004
Rock Island, Illinois 61204-2004

Sincerely,

Signed By
J.T. SCHMERPE

Dudley M. Hanson, P.E.
Chief, Planning Division

Enclosure

DISTRIBUTION LIST

DISTRIBUTION LIST FOR
ENVIRONMENTAL ASSESSMENT
UPPER MISSISSIPPI RIVER SYSTEM -
ENVIRONMENTAL MANAGEMENT PROGRAM
MONKEY CHUTE RESTORATION PROJECT
POOL 21, MARION COUNTY, MISSOURI

DISTRIBUTION -- EXTERNAL

AC
CCFIF

HONORABLE JOHN C. DANFORTH, UNITED STATES SENATOR
815 OLIVE ST SUITE 1967, ST LOUIS, MO 63101

HONORABLE THOMAS F. EAGLETON, UNITED STATES SENATOR
4039 FEDERAL OFFICE BLDG., ST. LOUIS, MO 63103

HONORABLE HAROLD L VOLKMER, REPRESENTATIVE IN CONGRESS
FEDERAL BUILDING, ROOM 370
HANNIBAL MO 63401

DIRECTOR, ADVISORY COUNCIL ON HISTORIC PRESERVATION
OLD PO BLDG #809, 1100 PENNSYLVANIA AVENUE NW
WASHINGTON DC 20004

OFFICE OF ENVIRONMENTAL PROJ REVIEW, ROOM 4241
DEPARTMENT OF INTERIOR, WASHINGTON, DC 20240

MR RICHARD NELSON - FIELD SUPERVISOR, U.S. FISH & WILDLIFE SERVICE
1439 SECOND AVE. - 2ND FLOOR, ROCK ISLAND, IL 61201

REGIONAL DIRECTOR, REGION 3, U.S. FISH AND WILDLIFE SERVICE
FEDERAL BLDG FORT SNELLING, TWIN CITIES MN 55111

COMMANDER, SECOND COAST GUARD DISTRICT
1430 OLIVE ST, ST LOUIS MO 63103

DIRECTOR, US ENVIRONMENTAL PROTECTION AGENCY
REGION VII, 324 E 11TH ST
KANSAS CITY MO 64108

MR VALDAN J ADAMUS - ADMINISTRATOR, US ENVIRONMENTAL PROTECTION AGENCY
250 S DEARBORN ST, CHICAGO IL 60604

DIRECTOR, FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION VII, 911 WALNUT STREET - ROOM 300
KANSAS CITY MO 64106

REGIONAL ADMINISTRATOR, FEDERAL HIGHWAY ADMINISTRATION
REGION VII, PO BOX 19715
KANSAS CITY MO 64191

SINGLE COPIES DISTRIBUTED EXCEPT AS INDICATED

DISTRIBUTION -- EXTERNAL

AC
COPIES

STATE CONSERVATIONIST, SOIL CONSERVATION SERVICE
555 VANDIVER DRIVE, COLUMBIA MO 65201

2

REGIONAL FORESTER, FOREST SERVICE
US DEPT OF AGRICULTURE, 310 W WISCONSIN AVE-SUITE 500
MILWAUKEE WI 53203

2

DIVISION ENGINEER, US ARMY ENGINEER DIVN-NORTH CENTRAL
ATTN NCOPO, 536 S CLARK STREET
CHICAGO IL 60605

MS HOLLY STOLCKER, UPPER MISS RIVER BASIN ASSN
415 HAMM BUILDING, 408 ST PETER STREET
ST PAUL MN 55102

HONORABLE JOHN ASHCROFT, GOVERNOR OF MISSOURI
STATE CAPITOL, JEFFERSON CITY MO 65101

OFFICE OF ADMINISTRATION, DIVN OF BUDGET & PLANNING
PO BOX 219, STATE CAPITOL
JEFFERSON CITY MO 65101

DIRECTOR, WATER RES PLNG PROGRAM
DIVISION OF ENVIRONMENTAL QUALITY, P.O. BOX 1368
JEFFERSON CITY, MO 65102

LARRY R GALE - DIRECTOR, MISSOURI DEPT OF NATURAL RESOURCES
PO BOX 110, JEFFERSON CITY MO 65102

NORMAN STUCKY, MISSOURI DEPT OF CONSERVATION
PO BOX 140, JEFFERSON CITY MO 65102

2

DIRECTOR, MISSOURI NATURAL RESOURCES COUNCIL
PO BOX 176, JEFFERSON CITY MO 65101

CHIEF ENGINEER, MISSOURI STATE HIGHWAY DEPT
STATE HIGHWAY COMMISSION BLDG, PO BOX 270
JEFFERSON CITY MO 65101

HONORABLE NORMAN L. FERRELL, MISSOURI SENATOR
MONTICELLO, MO 63457

SINGLE COPIES DISTRIBUTED EXCEPT AS INDICATED

DISTRIBUTION -- EXTERNAL

NC
CCPI

HONORABLE GARY D. SHARPE, MISSOURI REPRESENTATIVE
3305 PEEBING, HANNIBAL, MO 63401

COUNTY ATTORNEY, COURT HOUSE
MARION COUNTY, PALMYRA, MO 63461

COUNTY CLERK, MARION COUNTY COURT HOUSE
PALMYRA, MO 63461

COUNTY ENGINEER, COURT HOUSE
MARION COUNTY, PALMYRA, MO 63461

CHAIRMAN, MARION CNTY COURT
COUNTY COURT HOUSE, PALMYRA, MO 63461

MR. GEORGE PACE, MANAGER, CHAMBER OF COMMERCE
623 BROADWAY, HANNIBAL, MO 63401

THE MAYOR & CITY COUNCIL, CITY HALL
320 BROADWAY, HANNIBAL, MO 63401

CAROL ROBINS, MARION CNTY SOIL & WATER CONSV DIST
RR 1, PALMYRA, MO 63461

HANNIBAL FREE PUBLIC LIBRARY, 200 SOUTH FIFTH STREET
HANNIBAL, MO 63401

PALMYRA PUBLIC LIBRARY, 301 S. MAIN ST.
PALMYRA, MO 63461

MS CAROLYN RAFFENSPERGER, SIERRA CLUB
506 SOUTH WABASH, SUITE 525
CHICAGO IL 60604

MR ALBERT ETTINGER, SIERRA CLUB
401 N MICHIGAN AVE, SUITE 2700
CHICAGO IL 60611

PAUL HANSEN, IZAAK WALTON LEAGUE
UPPER MISSISSIPPI REGNL OFC, 6601 AUTO CLUB ROAD
MINNEAPOLIS MN 55438

SINGLE COPIES DISTRIBUTED EXCEPT AS INDICATED

DISTRIBUTION -- EXTERNAL

AC
COPIES.

JANE ELDER, THE SIERRA CLUB
214 N HENRY ST SUITE 203, MADISON WI 53703

THE COURIER-POST, HANNIBAL, MO 63401

NEWS ROOM, KHMO RADIO
HANNIBAL, MO 63401

NEWS ROOM, KGRC RADIO
HANNIBAL, MO 63401

*SINGLE COPIES DISTRIBUTED EXCEPT AS INDICATED

END

10-87

DTIC